LONDON MEDICAL SOCIETY

4

REPORT

ON THE

PROGRESS

OF

VACCINE INOCULATION

IN

BENGAL,

FROM THE PERIOD OF ITS INTRODUCTION IN NOVEMBER 1802, TO THE END OF THE YEAR 1803;

WITH AN

APPENDIX,

SUBMITTED TO THE

MEDICAL BOARD AT FORT WILLIAM.

By JOHN SHOOLBRED,

SUPERINTENDENT GENERAL OF VACCINE INOCULATION.

PRINTED IN CALCUTTA:

AT THE HONORABLE COMPANY's PRESS.

1804.

EXTRACT from the Proceedings of His Excellency the Most Noble the Governor General in Council, *in the Public Department, dated the 3d May* 1804.

ORDERED, that the Report on the progreſs of Vaccine Inoculation in Bengal, and in the Provinces ſubject to the immediate authority of this Government, from the period of its introduction in November 1802, to the end of the year 1803, ſubmitted to the Medical Board at Fort William, by Mr. John Shoolbred, Superintendent General of Vaccine Inoculation, be publiſhed for general information at the expenſe of the Honorable Company, and that Mr. Shoolbred be deſired to ſuperintend the Publication.

The Governor General in Council entertains a juſt ſenſe of the zeal, diligence, and

and ability manifeſted by Mr. Shoolbred, in the diſcharge of the important duty committed to him as Superintendent General of Vaccine Inoculation. The Report ſubmitted to Government by Mr. Shoolbred affords abundant evidence of the difficulties oppoſed to the preſervation and extenſion of the benefits of Doctor Jenner's diſcovery in this country, as well as of the indefatigable aſſiduity and public ſpirit with which every obſtacle to the ſucceſs of the orders of Government has been encountered and ſurmounted by Mr. Shoolbred, and by his predeceſſor Mr. William Ruſſell.

The ſupport and aſſiſtance which Mr. Shoolbred has received from the Medical profeſſion, and from others reſiding as well in Calcutta as in the diſtant Provinces, are highly creditable to the Gentlemen whoſe exertions are noticed in Mr. Shoolbred's Report; and the ſucceſs with which thoſe laudable and diſintereſted exertions have already been attended, affords a reaſonable ground of expectation, that the invaluable benefits of

Doctor

Doctor Jenner's discovery, will be preserved in perpetuity in these extensive and populous Provinces, and that they will in time be disseminated through every part of Asia.

By Command of
His Excellency the Most Noble
The Governor General in Council,

J. LUMSDEN,
Chief Sec. to the Govt.

FORT WILLIAM, *the* 3d *May*, 1804.

To JOHN SHOOLBRED, Esq.

Superintendent General of

Vaccine Inoculation.

SIR,

I HAVE the pleasure to transmit to you, by the authority of Government, an extract from the Proceedings of His Excellency The Most Noble The Governor General in Council, respecting your Report on the introduction and progress of Vaccine Inoculation in Bengal, and the Provinces subject to the immediate authority of this Government.

His Excellency in Council being pleased to Order, that the Report shall be published for general information at the expense of the Company, under your inspection, you are hereby directed by the Medical Board, agreeably to the Orders they have received for this purpose, to superintend the Publication.

The

The manner in which His Excellency in Council has been pleaſed to expreſs his approbation of your exertions, is in every reſpect gratifying to the Board, and I have the pleaſure to remain,

SIR,

Your moſt Obedient Servant,

FRANCIS BALFOUR,

Firſt Member

Of the Med. Board.

FORT WILLIAM,

Medical Board Office, May 10, 1804.

To FRANCIS BALFOUR, Esq.

President, and Members of the

Medical Board.

Gentlemen,

I HAVE the pleasure to forward to you a Report on the progress of Vaccine Inoculation in Bengal, and the Provinces subject to the immediate authority of this Government, from the time of its introduction here in November 1802, to the conclusion of last year.

As I am desirous that the Report should exhibit a plain, intelligible, and uninterrupted narrative of the establishment and promotion of Vaccine Inoculation during the above period, I have been obliged to omit many circumstances relative to the disease, with which it is nevertheless desirable that the Board should be acquainted.

I have therefore, with the view of preſerving uniformity, thrown ſuch circumſtances into the form of an Appendix, which is annexed to the Report.

My object, both in the Report and Appendix, has been to condenſe my materials as much as I thought was conſiſtent with perſpicuity; notwithſtanding which, they have both extended to a much greater length than I at firſt expected. The deſire of brevity has prevented my inſerting copies of Orders and extracts of Letters, which would have increaſed them ten-fold *. But as theſe are the principal ſources from which many of my obſervations are drawn, I cannot, in juſtice to the merits of my able aſſociates in the Vaccine Department, deny myſelf the pleaſure of forwarding to the Board, my Books of Regulations and Correſpondence, as the beſt proof I can offer

* The references to particular letters have been retained in the Report and Appendix, though the letters themſelves are not publiſhed.

of

of the zeal, ability, and industry of the Gentlemen recommended by the Board for the discharge of this important duty.

I have the honor to be, &c.

(Signed)

JOHN SHOOLBRED,

Superintendent General of

Vaccine Inoculation.

CALCUTTA, *March* 22, 1804.

A TRUE COPY,

FRANCIS BALFOUR.

FORT WILLIAM,

Medical Board Office, April 19, 1804.

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REPORT *on the* INTRODUCTION *and* PROGRESS *of* VACCINE INOCULATION *in Bengal; by* JOHN SHOOLBRED, *Superintendent General of Vaccine Inoculation.*

IN commencing the report on Vaccine Inoculation, which it is now my duty to lay before the Medical Board, it may not be unimportant, though it is not ſtrictly official, to exhibit a ſhort view of the introduction of the diſeaſe into India and Bengal, and to ſtate, in as few words as poſſible, what had been done towards its permanent eſtabliſhment in this part of Aſia, previouſly to my appointment as Superintendent General of Vaccine Inoculation.

THE year 1798 was the auſpicious era in which the world was firſt made acquainted with the happy diſcovery of Doctor Jenner. The practice of vaccine inoculation was

begun in London in January 1799, and has ever ſince been rapidly encreaſing in Europe, and gradually extending its benefits to every quarter of the globe. The accounts of the new inoculation publiſhed in England ſoon reached this country, and excited, as might have been expected, a very lively intereſt in all the members of the medical profeſſion, who anticipated with anxiety and pleaſure the acquiſition of a diſcovery, which promiſed an exemption from pain, miſery, and premature death, to ſo large a portion of mankind. Impreſſed with theſe animating ſentiments, they expreſſed an earneſt deſire to obtain poſſeſſion of the newly diſcovered diſeaſe. It was ſoon known, however, that the vaccine virus did not retain its infecting property long enough to permit its being tranſmitted in an active ſtate to any part of India by Sea; and that, conſequently, our only means of procuring it, muſt be by different ſtages overland; by Vienna and Conſtantinople; Bagdad, Buſſora, and Bombay.

So early as March 1801, the Honorable Jonathan

Jonathan Duncan, Governor of Bombay, addreſſed a letter on this ſubject to the Right Honorable the Earl of Elgin, Britiſh Ambaſſador at Conſtantinople, begging that His Lordſhip would direct a ſupply of genuine vaccine matter to be forwarded, as ſoon as poſſible by Bagdad, and Buſſora; where, the virus being renewed on freſh ſubjects, it might have the better chance of reaching Bombay in a ſtate capable of communicating the infection.

It was not till the September following that Lord Elgin had an opportunity of complying with the requeſt of Mr. Duncan; when, the diſeaſe being fully eſtabliſhed at Conſtantinople, and His Lordſhip having given ſo eminent a proof of his confidence in the ſafety and efficacy of the new practice as to have his own child vaccinated when only ſeven days old, ſome matter was forwarded to Bombay. This firſt ſupply failed. By perſevering, however, in forwarding frequent ſupplies of the virus on threads, the diſeaſe was at

length fortunately produced by Doctor James Short at Bagdad, early in the year 1802. With matter renewed on Doctor Short's patients at Bagdad, Mr. Milne ſoon ſucceeded in producing it at Buſſora; and finally, after a long and patient perſeverance, under the diſappointment of innumerable failures, for which the Medical gentlemen at Bombay deſerve infinite praiſe, a ſucceſsful Inoculation was at length effected by Doctor Scott, on the 14th of June 1802, on the arm of Anna Duſthall, a healthy child of three years old; a circumſtance which it is of importance to ſtate, becauſe from this patient originally emanated the whole of the vaccine virus now in uſe in India. In tracing the abovementioned route of the vaccine infection, it deſerves to be noticed, that, in two of the ſtages, the virus preſerved its infecting quality longer than it is uſually found to do; the diſtance from Bagdad to Buſſora being thirty to thirty-five days journey, and the paſſage by ſea from Buſſora to Bombay, not leſs than three weeks.

The diſeaſe being thus ſecured at Bombay, the virus was ſoon produced in ſufficient abundance to afford ſupplies to Poona, Surat, Hydrabad, Ceylon, Madras, and many other places on the coaſt, and in the Deccan. Frequent attempts were at the ſame time made to convey it from different places to Bengal by means of dried matter, but all of them failed. The zeal and activity, however, of Doctor Anderſon, Phyſician General at Madras, in promoting whatever is new or uſeful, ſoon prompted him to ſeize a favourable opportunity of putting us in poſſeſſion of the diſeaſe by means of ſucceſſive inoculations performed on board ſhip; and on the 17th November 1802, we had the ſatisfaction to ſee his endeavours crowned with ſucceſs, by the arrival of Charles Norton, a healthy boy about fifteen years of age, born of European parents at Port Jackſon, with a genuine vaccine puſtule of the ſixth day on each arm. From a native child at Madras, Doctor Anderſon, on the 10th October, inoculated John Creſswell, a boy thirteen years of

age;

age, alſo born at Port Jackſon. This boy was immediately embarked on board the ſhip Hunter, Captain Anderſon, who from him inoculated a female child on the 22d, from her a Malay boy on the 2d November; and from the Malay boy, on the 12th, Charles Norton, who, as above ſtated, arrived here on the 17th with the diſeaſe upon him. From the arm of Norton ſeveral children were immediately inoculated, among whom were two of Sir George H. Barlow, one of the late Colonel Dyer, one of Mr. Birch, one of Mr. Trail, and one of Mr. Binny; all of whom paſſing through the diſeaſe in the moſt ſatisfactory manner, the genuine vaccine infection may from this time be conſidered as eſtabliſhed in Bengal.

This important circumſtance was announced to His Excellency The Moſt Noble The Governor General in Council, in a letter from John Fleming, Eſq. then firſt Member of the Medical Board, under date the 29th November, 1802; in which,

amongſt

amongſt other ſuggeſtions for the preſervation and diffuſion of the diſeaſe under this Preſidency, he recommends that a ſurgeon of approved ſkill and aſſiduity ſhould be appointed to the charge of preſerving a conſtant ſupply of recent genuine matter, for the uſe of the metropolis and ſubordinate ſtations; as well as to vaccinate the children of ſuch natives as might apply to him; and to inſtruct ſuch of the Hindoo and Mahomedan Phyſicians as might wiſh to practice Vaccine Inoculation, in the manner of performing the operation, and the ſymptoms by which they might be enabled to diſtinguiſh the genuine diſeaſe.

To the uſeful and important duty here delineated, His Excellency The Moſt Noble The Governor General in Council was pleaſed to nominate Mr. William Ruſſell, a gentleman whoſe abilities and zeal for improvement in every branch of medical ſcience, peculiarly qualified him for ſuch a ſituation. Mr. Ruſſell, while he continued in office, aſſiduouſly kept up the diſeaſe, ſupplied

ſupplied the medical practitioners in Calcutta with matter for the inoculation of their own patients, and tranſmitted the virus ſucceſsfully to different parts of the country; and even to Prince of Wales's Iſland by ſea. In the formation of a new eſtabliſhment, it is not eaſy at once to fall into the beſt and moſt regular method of conducting it. This circumſtance, together with a ſerious indiſpoſition with which Mr. Ruſſell was attacked ſoon after his appointment, and which finally obliged him to go home, prevented the preſervation of any record, from which it can be accurately aſcertained, what progreſs the diſeaſe made during the firſt three months, ſucceeding its introduction into Bengal. From my habits of intercourſe and friendſhip with my intelligent predeceſſor, I can, however, confidently affirm, that no exertions on his part were wanting to preſerve and diffuſe, as widely as poſſible, the benefits of this happy diſcovery. All the European children in Calcutta and its neighbourhood were ſpeedily vaccinated. The diſeaſe was certainly extended

tended to Cawnpore and Futty Ghur, in that direction; to Rungpore, to the Northward; and it may fairly be inferred, to all nearer and intermediate places where the inhabitants were desirous of having it. Enough, in short, was done to make medical men in this part of India pretty generally acquainted with the appearances of the disease from their own observation; and to satisfy anxious and intelligent parents that they had obtained a benign and inoffensive substitute for the most malignant, loathsome, and fatal disease which ever afflicted the human race. More, in so short a time, could scarcely be expected.

HAVING thus rapidly traced the vaccine disease in its progress from Europe to Bengal, and exhibited, as accurately as the nature of the subject will admit, the early state of it in these provinces, I shall now have the satisfaction of reporting to the Board what has been done towards its preservation and extension, since my own appointment to the office of Superintendent General of

Vaccine Inoculation. In doing this, I hope I ſhall be excuſed the liberty of premiſing a few words, to ſhew what ſhare, as an individual, I had in the preſervation and promotion of Vaccine Inoculation prior to that period.

FROM the time that the diſeaſe was imported into this ſettlement, and long before it became a point of official duty with me, I had ſucceeded in keeping it up by a ſeries of ſucceſſive inoculations performed at the native hoſpital; and with the concurrence of His Excellency the Moſt Noble Patron, and the Governors of that humane inſtitution, had formed a plan for extending its benefits to all who might deſire it in Calcutta, as well as to ſecure a depot of genuine matter under my own eye, for the ſupply of other places, ſhould it at any time be required. This eſtabliſhment, which I found eminently uſeful for both theſe purpoſes, afforded me alſo an excellent opportunity of obſerving the nature of the diſeaſe, of making experiments to prove its efficacy in

rendering

rendering the conſtitution unſuſceptible of ſmall-pox, and on the beſt manner of preſerving and tranſmitting it to other places, as will be more particularly ſpecified in the concluſion of this report.

The bad ſtate of Mr. Ruſſell's health obliging him to depart for Europe on the 1ſt of March 1803, His Excellency the Moſt Noble the Governor General in Council, was pleaſed to appoint me, the 16th of the ſame month, to ſuperintend the promotion of Vaccine Inoculation in his room; and it is from this date that the preſent report may be conſidered as aſſuming, more ſtrictly, the nature and form of an authentic official record.

The vaccine virus, as has been obſerved above, had been tranſmitted by Mr. Ruſſell to many of the civil and military ſtations, where it was kept up for ſome time; but when the European children at thoſe ſtations had been all inoculated, the diſeaſe was in moſt inſtances loſt, from the want of freſh ſub-

jects to renew the infection. It continued, I believe, to exist only at the Native Hospital, under my management; and at Dacca, Moorshedabad, and Patna, where Mr. Tutin, Mr. Robertson and Mr. Maenabb, with the most laudable zeal, had, by means of rewards, and the more extensive population of those cities, managed so, as still to keep up a supply of recent and genuine infection on the living subject. The Medical Board, however, wisely considering that the preservation of the vaccine virus to Bengal, and perhaps to India, was a matter of too much importance to trust to the casual zeal of a few individuals, which might evaporate when the novelty of the thing was over, soon afterwards laid before government the plan of an establishment, every way calculated to secure to Bengal, and the provinces under this Presidency, every possible advantage from vaccine inoculation. This plan the Most Noble the Governor General in Council, with the most humane and liberal views, was pleased to carry into effect on the 5th of May 1803. Subordi-

nate

hate ſuperintendents of vaccine inoculation were appointed at eight different ſtations; ſo diſtributed over the country as to afford the beſt opportunity of diffuſing the benefits of vaccination among the inhabitants; as well as to provide ſo many depots of infection, to ſupply each other in caſe of its accidental loſs at any one of them: which ſubſequent experience has ſhewn may ſome times happen, notwithſtanding every care and precaution to guard againſt it. As it can ſcarcely be ſuppoſed, however, that ſo untoward an accident can ever happen at all, or many of the ſtations, at the ſame time, the formation of the vaccine eſtabiſhment, beſides its other advantages, may ſafely be regarded as a certain means of preſerving the genuine diſeaſe in Bengal. Under each of the Superintendents of Vaccination, a certain number of the civil Surgeons, neareſt to each ſtation, were directed to act, in promoting to the utmoſt of their power, the general views and intention of the eſtabliſhment, and by this addition of ſtrength, the vaccine department may be

ſaid

ſaid to have been put upon a permanent and effective footing which nothing can exceed.

THE utility of the plan here deſcribed will be beſt demonſtrated by the following abſtract of the proceedings of the ſeveral Superintendents of Vaccination.

Number of patients vaccinated at the principal and Subordinate Stations, up to the end of laſt year.

Stations.	*Superintendents.*	*Claſſes.*		*Total.*
Calcutta,	John Shoolbred,	Chriſtians,	270	
		Mahomedans,	837	
		Hindoos.	473	
				1580
Dacca,	William Tutin,	Not aſcertained.		652
Moorſhedabad,	Jas. Robertſon,	Ditto,		360
Patna,	James M'Nabb,	Chriſtians,	30	
		Mahomedans,	229	
		Hindoos,	1366	
				1625
Benares,	*No Report,*			
Allahabad,	A, Gibb,	Chriſtians,	29	
		Natives,	90	
				119
		Carried forward,		4336

Cawnpore,

		Brought over,	4336
Cawnpore,	Acting P. Ewart,	Not aſcertained,	120
Furruckabad.	*No Report.*		
		Total at the Vaccine Stations,	4456 *.

UPON the foregoing abſtract it is neceſſary to remark, for the purpoſe of explaining why ſo little has been done at the more diſtant ſtations, that the matter having been loſt there after its firſt introduction, it was not poſſible to reſtore it in an active ſtate, even ſo far as Allahabad, before the end of November. Not long after the formation of the vaccine eſtabliſhment, the matter in uſe at Patna, from ſome unaccountable cauſe, loſt its infecting quality, and the inoculation with it was conſequently for a time ſuſpended. At the ſame time, the diſeaſe

* " It would have been eaſy for the Superintendents of Vaccination to have inoculated a greater number of patients; but as the principal object with them has hitherto been to eſtabliſh a ſure and permanent ſyſtem for keeping up the diſeaſe, it was more adviſeable to inoculate a few only at each time, than, by inoculating a greater number, to run the riſk of depriving themſelves of freſh ſubjects in the vicinity of their reſpective ſtations."

was

was loſt at Moorſhedabad, owing to three children from whom virus was to have been taken for farther inoculations, having been carried away without Mr. Robertſon's knowledge. I ſoon reſtored it to that ſtation, but it was not till the end of September, after various failures with matter both from Calcutta and Moorſhedabad, that Mr. Macnabb ſucceeded with ſome matter forwarded by me, in reproducing the diſeaſe at Patna. Mr. Macnabb immediately forwarded matter to Allahabad, with which Mr. Gibb at length ſucceeded in getting poſſeſſion of the diſeaſe, towards the end of November.

At Benares and Furruckabad it does not appear that any perſon has taken charge of the vaccine duty. I have had no applications for matter from thoſe ſtations, nor received any anſwer to letters addreſſed to them.

Regular reports have not been received from all the civil ſurgeons directed to co-

operate

operate with the ſubordinate ſuperintendents of vaccination; but from their applications for matter, and the aſſurances with which they are accompanied of doing all in their power to forward the benevolent views of government in this reſpect, there is reaſon to believe that, at moſt of the zillah ſtations, vaccine inoculation has been carried as far as the natives have been found willing to contribute ſubjects for keeping it up. It may in this place be remarked, that the whole tribe of Bramin inoculators are, from intereſted motives, determined enemies of the new practice, and, by their influence over the minds of the people have certainly, in many inſtances, prevented their bringing forward their children. This obſtacle, however, to the more extenſive diffuſion of the diſeaſe will gradually decreaſe, particularly if the ſmall pox ſhould happen to break out epidemically at any of the ſtations where vaccination has been much practiſed. The natives will then have convincing evidence, that the children who have already been

vaccinated are proof againſt the contagion of this deſtructive diſeaſe, however cloſe their intercourſe may be with thoſe who labour under it.

To the above number furniſhed by the ſuperintendents of vaccination, I have the ſatisfaction to add the following, from gentlemen in different parts of the country.

Mr. Charles Todd, ſurgeon at Rungpore, vaccinated, by himſelf and the Baieds in his diſtrict, up to the middle of laſt year, no leſs a number than - - - - -	2080
Mr. Kegan, at Chuprah, - - - -	476
Mr. Harper, at Backergunge, by himſelf and ſome Bramins, - - -	218
Mr. Hunter, at Burdwan, chiefly from the jail, - - - - - - -	43
Mr. D. Todd, at Soorool, - - - -	20
Mr. Patch, at Gya, - - - - - -	22
Mr. Julius, at Arrah, - - - - -	56
Mr. Barnett, at Bauleah, - - - -	17
Mr. Thomas, Cuttack, - - - - -	7

Doctor

Doctor Hare, Calcutta, - - - - -	411
Mr. Cheeſe, Calcutta, - - - - -	291
Mr. Gregory Jackſon, agent for loading and unloading Company's ſhips at Kedgeree, - - - - - - -	16
Mr. Maſon, ſalt agent to the Honorable Company at Tumlook, by himſelf and his uncovenanted Aſſiſtant, chiefly Hindoos, - - - - - -	553
	4,210

I CANNOT add this great number of patients to the regiſter of vaccination without doing juſtice to the humane zeal and uncommon induſtry of Mr. Maſon in conferring the benefits of the new inoculation on ſo many of the natives in his diſtrict. Mr. Maſon very ſoon after the introduction of the diſeaſe, requeſted me to vaccinate one of his Molungies, from whom at the proper time he took matter for farther inoculations, and has ever ſince kept it up with a few

interruptions, ariſing from the neceſſity of his being occaſionally abſent from his ſtation. The reports with which I have been favored by Mr. Maſon, evince an attention to the progreſs of the diſeaſe, and a diſcrimination of its characteriſtic appearances, very uncommon in a perſon not of the medical profeſſion, and not exceeded by any of thoſe who are: and I have met with no one who has formed a juſter eſtimate of the value of the new inoculation to mankind, or who places in a ſtronger point of view the obſtacles which will always exiſt to prevent the natives of this country from reaping the full benefit of ſo great a bleſſing. In one of his letters, Mr. Maſon lamenting this circumſtance, expreſſes himſelf in the following words.

" The great obſtacle to the general diffuſion of the vaccine inoculation ſeems to proceed from the ſtupidity and apathy of the natives of all ranks and deſcriptions, which muſt ever diſqualify them as practitioners,

titioners on whom any reliance can be placed for keeping up the genuine diſeaſe; and the utmoſt exertions of every European in the country, even if all were zealous in the cauſe, could not extend the bleſſing to one-tenth of the Company's vaſt dominions in the Eaſt. This is an obſtacle to which I ſee no poſſibility of applying any remedy."

I HAVE the more willingly inſerted the above quotation, becauſe it ſhews, from the teſtimony of a moſt reſpectable, well informed and diſintereſted ſervant of the Company, the excellence of the plan adopted by Government at the recommendation of the Medical Board; which, by multiplying the number of European vaccinators in every part of the Country, affords in the greateſt poſſible degree the only remedy that can be deviſed againſt the apathy and incapacity of the natives above noticed by Mr. Maſon.

COLLECTING then the whole of the items in the preceding abſtracts, the number vaccinated, will appear as under: At

At the Vaccine Stations, - - -	4456
In other parts of the Country, - -	4210
At Prince of Wales's Iſland as here-	
after mentioned, - - - - -	1000
Vaccinated, but of whom no return	
has been made, ſay - - - -	1500
Total vaccinated, up the 31ſt	
December 1803. - - -	11,166

Besides ſupplying the vaccine ſtations, as already ſtated, and promoting the inoculation from thence as far as could be accompliſhed, we have had the further ſatisfaction of ſucceſsfully tranſmitting virus, or putting it in the faireſt train of tranſmiſſion, to places beyond the ſeas.

One of the firſt letters which I had occaſion to enter in my book of Vaccine Correſpondence, was from W. E. Phillips, Eſq. temporary Governor of Prince of Wales's Iſland, under date the 27th of February 1803, announcing to this Government, that

Mr.

Mr. Waring, Senior Medical Gentleman there, had ſucceeded in producing the diſeaſe with matter forwarded by Mr. Ruſſell, after a voyage of twenty-three or twenty-four days; and that at that time they had inoculated about 100 children. I am ſorry to obſerve, however, by a letter received a few days ago from Mr. Heriot that, after carrying the diſeaſe ſucceſsfully through about a thouſand patients, they ſomehow or other, as he ſays, unaccountably loſt it. It could not be for want of patients, becauſe no prejudices againſt it exiſt there, and as the ſmall-pox has not been on the Iſland for ſeveral years, there could be no difficulty in finding abundance of ſubjects ſuſceptible of the infection.

Our next attempt by ſea was to tranſmit the diſeaſe to Fort Marlbrough, where every trial previouſly made to introduce it by means of dried matter ſent from Madras, had proved abortive. Succeſſive inoculations performed on board ſhip, was therefore the only way by which we could hope to put

Sumatra

Sumatra in poſſeſſion of what muſt prove ſo great a bleſſing to that Iſland, where the ſmall-pox, when it breaks out among the Malays, rages with ſuch devaſtating fatality as often to depopulate whole tracts of Country.

This plan was, under the authority of His Excellency the Moſt Noble the Governor General in Council, carried into effect in December laſt, by the embarkation, on board the Honorable Company's ſhip Carmarthen, Captain Dobree, of fourteen children from the lower Orphan School, who had never had the ſmall-pox nor cow-pox. Two of theſe children, having been ſucceſsfully inoculated before they left town, and having the diſeaſe of the ſixth day, well characteriſed in two places in each arm, the others were to be inoculated from them in ſucceſſion during the voyage. No accounts have yet been received of the arrival of the Carmarthen*; but the meaſures adopted, were

* See the concluſion of the Appendix.

ſuch,

ſuch, as could hardly fail to ſucceed in tranſmitting the diſeaſe to Bencoolen on the living ſubject.

HAVING accompliſhed this plan as far as depended on us, with every fair proſpect of ſucceſs, His Excellency the Moſt Noble the Governor General expreſſed a deſire that the diſeaſe ſhould alſo be forwarded to Port Jackſon; but the voyage to that ſettlement being not leſs than ſeventy or eighty days, and it being impoſſible at preſent to procure children to undertake the voyage, in ſufficient number to keep up the diſeaſe for that length of time, we have been reluctantly obliged to poſtpone the accompliſhment of His Lordſhip's views till ſome future period.

THE ſame obſtacle exiſts againſt any propoſal for immediately ſending the diſeaſe to China, of which His Lordſhip has expreſſed himſelf equally deſirous.

IN the preceding pages I have endeavour-

ed to exhibit, in as conciſe a form as poſſible the hiſtory of the introduction, progreſs, and preſent ſtate of vaccine inoculation in Bengal, and the provinces immediately depending on the Supreme Government, together with the meaſures that have been adopted towards its colonization, (if I may be allowed the expreſſion,) in diſtant ſettlements. It may perhaps be expected that a greater number of patients ſhould appear in the regiſter of vaccination. But when it is conſidered, that the natives of this Country, naturally averſe to all innovation, have yet no affection for the new practice; that the moſt authoritative claſs of them oppoſe it from intereſted motives; that the circumſtance of its coming originally from the cow, an animal ſo highly revered by the Hindoos, ſo far from operating, as was at firſt expected, in its favour, has directly the contrary effect; and that the great body of the natives, the labouring claſs, are abſolutely ſo ſtupid and inſenſible, as to have no perception of its ineſtimable value to mankind;

kind; I ſhould hope it would ſtill appear, that ſome benefit has already been derived from it, and that no inconſiderable ſteps have been taken to inſure its permanent reſidence in this quarter of the globe.

The Bramins, who practice inoculation for the ſmall-pox, acknowledge that they loſe about one in two hundred. This is probably ſtating the proportion of deaths lower than actually happens; but allow it to be correct, and ſay, that all the above 11,000 patients, inſtead of being vaccinated, had been inoculated for the ſmall-pox, the number of lives ſaved would be fifty-five. But ſuppoſe, what might equally have happened, that the ſame number had taken the ſmall-pox in the natural way, the mortality of which in India has been eſtimated at one in three, then the number of lives ſaved by vaccination in the courſe of laſt year is no leſs than 3666; beſides the incalculable number that muſt have fallen ſacrifices to the ſpreading of the contagion generated on

the bodies of ſo many ſmall-pox patients. However inſenſible the native inhabitants may be to ſo great a bleſſing, the European part of the community regard it with far different feelings. Inoculation for the ſmall-pox, on children born of European parents in India, is certainly much leſs favorable here than in Europe. There, one in 300 only dies. Here, I believe I ſhall not err much, if I ſay one in ſixty or ſeventy. The great riſk which thus attended variolous inoculation, kept families every year in a ſtate of inexpreſſible trouble and anxiety during the months in which the ſmall-pox prevailed; and the duties of the medical practitioner, during this interval, became of courſe peculiarly harraſſing and laborious.

These are poſitive advantages, already obtained by the introduction of vaccine inoculation into Bengal, which the intelligent part of ſociety know how to eſtimate. What we have to look to in future appears to me to be, not only the continuance of the bleſſings

bleſſings before enumerated, but the animating proſpect of a ſure and ſolid foundation having been laid for its univerſal diffuſion in India, as well as to our Eaſtern ſettlements, to Java, China, New South Wales, and even to the numerous iſlands ſcattered throughout the Pacific Ocean. In contemplating a period ſo auſpicious to the happineſs of mankind, and ſo glorious to the name of JENNER, one cannot help anticipating, that, while an approving Sovereign and an admiring Country do juſtice to the talents, the wiſdom and energy ſo eminently diſplayed in the military and political career of our Moſt Noble and Illuſtrious Governor General, it will not eſcape the notice of the philoſopher and the philanthrophiſt, that the ſame diſtinguiſhed adminiſtration was no leſs conſpicuous for the humanity, than for the vigour of its meaſures; and that to the encouragement afforded to vaccine inoculation, by His Excellency the Moſt Noble MARQUIS WELLESLEY, ſo large a portion of the globe has been indebted, for the en-

of

joyment of the ineſtimable bleſſings derivable from the greateſt diſcovery that ever was made by man for the benefit of his fellow creatures.

(Signed)

JOHN SHOOLBRED,

Superintendent General of

Vaccine Inoculation.

CALCUTTA,

March 22, 1804.

FORT WILLIAM,

Medical Board Office, April 19, 1804.

TRUE COPY,

FRANCIS BALFOUR.

APPENDIX.

APPENDIX *to the* REPORT *on* VACCINE INOCULATION, *presented to the* MEDICAL BOARD, *March* 24, 1804.

SECTION I.

OF THE GENUINENESS OF THE VACCINE VIRUS IN USE IN BENGAL.

IN referring to the preceding report, it will be seen that every possible care was taken that the vaccine matter forwarded from Europe to India should pass through none but unexceptionable subjects during its journey.

AT Bombay, Madras, and Calcutta, the healthiness of the first subjects of vaccination is particularly specified; and that the same attention was paid to this circumstance at Vienna, Constantinople, Bagdad, and Bussora, is sufficiently attested by the character of the Medical Gentlemen, to whose lot it

fell to be ſo inſtrumental in conferring the bleſſing of vaccination on this quarter of the globe.

When the diſeaſe reached Bengal, the appearances which exiſted on the arm of Norton, on whom it was imported from Madras, and which ſubſequently took place upon the arms of the European children inoculated immediately from him, correſponded ſo exactly with the deſcriptions and figures publiſhed in the treatiſes of Doctor Jenner and Mr. Aiken; that no perſon who had an opportunity of comparing them, doubted of our having obtained poſſeſſion of the genuine vaccine diſeaſe. In a climate ſo different from that in which the diſeaſe was firſt diſcovered, it was nevertheleſs deſirable that it ſhould be put to the ultimate teſt of purity, by a trial of its power to render the conſtitution once ſubjected to it, unſuſceptible of the future effects of ſmall-pox contagion, both by inoculation and expoſure. This effect of it had been inconteſtibly proved in England in thouſands

ſands of inſtances, but ſtill, as it might be ſaid we know not the effect of it in this climate, an opportunity of making the experiment was anxiouſly deſired. Accordingly on the 16th of January 1803, in the preſence of Mr. Munro, ſecond Member of the Medical Board, I inoculated with recent fluid variolous matter taken on the ſpot, three children who had previouſly paſſed through the vaccine diſeaſe, and three more, with the ſame matter, only an hour after it had been taken. Theſe inoculations, as was expected, produced nothing like variolous affection. In ſome there occurred a ſlight inflammation of three or four days; in others no viſible effect followed the inſertion of the matter. Theſe experiments I reported to Mr. William Ruſſell, then Superintendent General of vaccine inoculation; and under the authority of the Medical Board, they were publiſhed by him in the Calcutta Gazette, for the information of the public. Similar proofs of the efficacy of vaccination in preventing ſmall-pox, both by inoculation and expoſure, were obtained

by other Gentlemen in different parts of the country (1).

I SHOULD have been glad to have repeated these experiments this season, but the judicious prohibition of small-pox inoculation in Calcutta and its neighbourhood by the police, has prevented my being able to obtain a supply of variolous virus for that purpose. It is not, however, a matter of much consequence, because there is not the smallest room for apprehension that the vaccine virus has in our hands suffered any diminution of power. On the contrary, from the uniform and invariable character displayed by the vaccine pustule, through a series of upwards of 1,500 patients inoculated with my own hands, as well as from the concurring evidence of all the subordinate stations, I have the most perfect conviction, that the disease we now inoculate possesses in full force the prophylactic quality which renders its discovery so inestimable a

(1) See Mr. Macnabb's letter No. 44, and Mr. Kegan's No. 45.

blessing

bleſſing to mankind. Even in the dark ſkin of the native of Bengal, the traits of genuine vaccination are ſufficiently conſpicuous to remove all doubts on the ſubject; the commencement of veſication on the fourth or fifth day; its gradual encreaſe, circular form, depreſſed centre, cellular ſtructure and limpid contents; the ſurrounding tumefaction, or areola, where the ſkin is fair enough to ſhew it; the ſlight fever on the eighth, ninth, or tenth day; and the ſubſequent progreſſive converſion of the veſicle into its peculiar horny, dark brown, gloſſy ſcab, dropping off from the fourteenth to the twentieth day, and leaving a permanent pitted cicatrix; are circumſtances belonging to no other affection to which the human body is ſubject; and which, in my opinion, would ſtamp the vaccine inoculation with the full poſſeſſion of its ſpecific power, did no opportunity of putting it to the teſt of experiment ever again occur. The ſeries of appearances above deſcribed are, as I have ſaid, ſufficiently diſtinguiſhable even in the ſkin of the native. But in Calcutta, from the

frequent

frequent opportunities that occur of inoculating the children of Europeans, we have the farther ſatisfaction of ſeeing the diſeaſe purſue its courſe with ſtill greater conformity to the drawings and deſcriptions of authors; particularly in the concomitant areola, which, when beginning to fade in the clear ſkin of a healthy European child may truly be ſaid to be beautiful. This appearance, announcing the completion of conſtitutional affection, cannot be contemplated without a mixed emotion of exultation and pity, when it is conſidered that the little train of phenomena juſt enumerated, which ſcarcely deſerve the name of morbid action, and occaſion neither fear, pain, nor anxiety, nor have ever, it is believed, been the cauſe of the loſs of life, is what the world has obtained in exchange for the moſt loathſome and extenſively fatal of all diſeaſes. A diſeaſe, which creates an age of fear and anxious trouble to the parent, of indeſcribable ſuffering to the child, often occaſioning loſs of ſight, unſeemly ſcars, the entailment of other deadly diſeaſes, and

even

even death itſelf in one out of five or ſix; in this country, probably one out of three:—a dreadful expenditure of human life, which ſmall-pox inoculation, though it often ſaved the individual, is truly believed, not to have leſſened in the aggregate.

SECTION II.

OF THE PERMANENCY OF THE VACCINE CHARACTER IN BENGAL.

IT was ſuſpected by ſome, that the climate of Bengal, either from its high temperature, or the almoſt conſtant prevailing moiſture of the atmoſphere, might have ſome effect in weakening the power of vaccine infection; and that the virus might thus gradually loſe its quality of communicating the diſeaſe from one ſubject to another. This ſuſpicion it was reaſonable enough to entertain, on the firſt introduction of a new diſeaſe into a climate where it had never before been known. I am happy however to obſerve,

obſerve, that, though there are times at which the diſeaſe ſeems leſs eaſily communicated than at others yet, where the inoculation does at all take effect, it has never, in the courſe of my experience, failed to exhibit all the eſſential characters of genuine vaccine.

In the month of July laſt, when the weather was in a high degree ſultry and moiſt, it was obſerved that a much greater number of failures happened in inoculating from patient to patient with recent fluid taken at the inſtant, than had ever before been known. I was then ſeriouſly alarmed for the loſs of the diſeaſe, having by the failure of ſome, and the deſtruction of the puſtule of others by ſcratching, been reduced on one of my inoculating days, to a ſingle puſtule from which I could obtain matter to keep up the diſeaſe. And what added greatly to my fears was, that this untoward occurrence took place juſt at the time that I had received accounts of its loſs both at Berhampore and Patna, as mentioned in the

report.

report, and ſtated more at length in Mr. Macnabb and Mr. Robertſon's letters (2).

By repeating my inoculations, however, for ſome time with two punctures in each arm, the diſeaſe ſoon reſumed its former appearance of ſtability; the virus became more abundant; I was able to reſtore it to the ſtations at which it had been loſt; and have ſince had no cauſe for apprehenſion on the ſcore of numerous failures (3).

I have ſeen no caſe of what has been called ſpurious cow-pox; that is, no anomalous affection at the inoculated part, which could, by a perſon properly qualified to judge, be taken for the real vaccine diſeaſe. I am therefore much diſpoſed, with Doctor Pearſon and his coadjutors at the vaccine inſtitution in London, to diſcard the term *ſpurious vaccine* altogether, as calculated to convey an erroneous idea of the nature of the diſeaſe. For if, in endeavouring

(2) Vide Correſpondence, No. 11, and No. 15.

(3) See the concluſion of the Appendix.

to produce the vaccine diſeaſe, we inoculate with real or ſuppoſed vaccine matter, either the *real vaccine* veſicle takes place, or it *does not*. The real diſeaſe cannot be miſtaken by a perſon of an experienced eye, and we are no more entitled to call any anomalous local affection which may ſucceed the inſertion of improper matter with a view to cow-pox, *ſpurious vaccine*, than we ſhould be to call *ſpurious ſmall-pox*; any ſimilar local affection produced by inoculation with common pus or any other extraneous matter, inſtead of matter actually variolous. I therefore wiſh it to be underſtood that, when in the report or appendix I make uſe of the term real vaccine, or genuine vaccine, it is only meant, in conformity with more general uſage, to expreſs the diſeaſe being fully and unequivocally characteriſed, and not as a term in oppoſition to ſpurious.

In thus endeavouring to aboliſh the term *ſpurious vaccine*, I would not be underſtood to mean, that leſs diſcernment and circumſpection than has been hitherto inculcated

are

are neceſſary in diſtinguiſhing between what is actually the *vaccine diſeaſe* and what is *not*. On the contrary, this diſtinction will always call for the utmoſt attention on the part of the vaccinator, in order to prevent any anomalous local affection which may follow inoculation intended to produce the vaccine diſeaſe from paſſing for that ſpecific action, both local and conſtitutional, which alone has the power of rendering the human body unſuſceptible to the future effects of ſmall-pox contagion.

It was ſuppoſed by Doctor Jenner, that matter taken at a late period was apt to produce what was called by him ſpurious vaccine; and he accordingly publiſhed a caution againſt taking matter for inoculation after the areola or efflorescence was formed. This however ſeems to be unneceſſary; for though it is very certain that matter taken after the ninth day, when the diſeaſe has obſerved its uſual progreſs, fails more frequently than that which is taken at an earlier period, yet when the inoculation does at all

ſucceed, ample experience has ſhewn, that no difference whatever exiſts in the kind or degree of the diſeaſe. The matter commonly uſed by me and at the other vaccine ſtations is that of the eighth day; but when, either from ſcarcity of matter, or for the ſake of experiment, that of the eleventh or twelfth has been uſed, no difference has been obſerved except its more frequent failure. On this account alone, however, it ought to be avoided when matter of an earlier day can be had. This abatement in the activity of the vaccine matter at a late period appears to be well accounted for by Doctor Pearſon; from whoſe laſt report of the vaccine inſtitution in London, I beg leave to copy the following paſſage.

"We ſubmit to the determination of others, an hypothetical explanation of the matter of the vaccine pock growing after the ninth or tenth day gradually leſs and leſs efficacious. The inoculated matter in the firſt place produces its own ſpecific ſtimulation, by which fluid matter is ſecreted

in

in a veſicular eruption; which matter is impregnated with the vaccine poiſon. This ſecretion continues till a part of it is abſorbed, and that change is thereby effected in the whole conſtitution, by which it is rendered incapable of being acted upon in a ſimiliar way in future, either by the vaccine or variolous poiſon. From the moment of this conſtitutional change, the peculiar vaccine ſecretion ceaſes, and mere ſecretion of ſerous fluid, or at leaſt not vaccine, goes on, from the irritation ſimply of the fluid already collected. Hence, ſuch ſerous fluid altering the vaccine poiſon, or this vaccine poiſon being abſorbed, the pock affords matter, frequently, of little or no efficacy after the twelfth or fourteenth day. That no pus is ſecreted in general, can only be imputed to the nature of the vaccine poiſon itſelf not ſtimulating, as the variolous does, uſually about the eighth day, to produce pus; but in place of ſo doing, the limpid fluid becomes thickened, either by the abſorption of the thinner parts into a ſcab, or by combination with oxygen. The ſe-

cretion

cretion itſelf, and the inflammation, gradually ceaſe, from the excitability which affords the inflammatory action and ſecretion being exhauſted."

SECTION III.

OF THE MEANS OF KEEPING UP THE VACCINE DISEASE.

WHEN we look back to the delays and difficulties which attended the tranſportation of the vaccine virus from Europe to Aſia, and duly conſider the great benefit already derived from its introduction into India, as well as the ſtill greater bleſſings which may hereafter be confidently expected from it, the means of guarding againſt the loſs of the diſeaſe to this part of the world, becomes a matter of the moſt important enquiry.

WHEN the knowledge of the vaccine diſeaſe was firſt communicated to the world by

by Doctor Jenner, two circumſtances, reſpecting its effects upon the human body, chiefly ſurpriſed medical men, and excited a degree of incredulity in the minds of many, otherwiſe well diſpoſed to give credit to the author of the diſcovery for the truth of his grand propoſition. It was ſaid that the vaccine diſeaſe, while it poſſeſſed the ineſtimable quality of rendering the human conſtitution once ſubjected to it, proof againſt the ſubſequent effects of ſmall-pox contagion, in whatever manner applied, was nevertheleſs, capable of being itſelf repeatedly and indefinitely received by the ſame individual; and that it could alſo be repeatedly and indefinitely received by a perſon who had already undergone the ſmall-pox. — Theſe two alleged facts, as they differed ſo widely from the law of analogy obſerved in other morbid poiſons, and particularly in that of ſmall-pox, which the new diſeaſe was then erroneouſly ſaid very much to reſemble, were received by medical philoſophers with becoming diffidence and heſitation. Some oppoſed the new inoculation

lation from a belief that it would be unwarrantable to exchange a diſeaſe to which mankind were ſubject only once in their lives, for one which might be received an indefinite number of times; not reflecting that the vaccine diſeaſe not being communicable otherwiſe than by inoculation, annulled this objection. Others conſidered the hands of medicine as ſtrengthened by the alleged fact, and ſpeculated upon the cure of other diſeaſes, where a freſh excitement might be wanted, by the introduction, at will, of a harmleſs vaccine fever. Another very important practical deduction, and which is the immediate buſineſs of our preſent enquiry, alſo depended on the deciſion which experience might pronounce on the truth or fallacy of the facts above mentioned. If they were true, it is evident that we ſhould never be at a loſs for the means of preſerving the diſeaſe on the living ſubject, becauſe thoſe who had already been vaccinated, as well as thoſe who had had the ſmall-pox, being equally capable of receiving the diſeaſe, might conſequently, be em-

ployed

ployed for conveying it by ſucceſſive inocu-lations to any given diſtance. When the diſeaſe was firſt introduced into Bengal, the facts alluded to, though doubted by many, had not been formally diſproved by any publication that had come to my hands; and I believe are even at this day held to be true by ſome practitioners in England. I therefore availed myſelf of the earlieſt op-portunities that offered of trying what would be the effect of reinoculating, with freſh vaccine matter, ſubjects who had once un-dergone the diſeaſe; and alſo thoſe who had already had the ſmall-pox. As the detail of ſome of theſe experiments were communi-cated to the Board, and under the ſanction of the Board to the public, through the chan-nel of the Calcutta Gazette, it is needleſs here to ſay more, than that in no one in-ſtance did I ſucceed in producing the diſeaſe a ſecond time, in a perſon once duly vacci-nated, or in one who had previouſly under-gone the ſmall-pox. I was therefore fully aſſured, by my own experience, that in nei-ther of theſe ways was there any hope of

keeping up the diſeaſe on the living ſubject. Mr. Robertſon made ſimilar experiments at Moorſhedabad, and with the ſame reſult (4). In the concluſion drawn from theſe experiments, I have ſince had the ſatisfaction of being confirmed by Doctor Pearſon, who ſtates the reſult of his experience at the vaccine inſtitution, in the form of the two following propoſitions: "Propoſition X. Perſons who have already gone through the vaccine, are unſuſceptible of it a ſecond time." "Propoſition XI. Perſons who have undergone the ſmall-pox, cannot be infected ſo as to produce the cow-pock."—And after ſtating the manner in which theſe facts were aſcertained ſimilar to our own experiments, this intelligent, indefatigable, and moſt zealous promoter of vaccine inoculation, makes, in a note, the following judicious remarks, on the cauſes which occaſioned a different opinion to be held in the early period of our acquaintance with the diſeaſe.

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(4) Vide Correſpondence No. 3.

"THE

" The ground for the opinion that perſons who have gone through the ſmall-pox are ſtill ſuſceptible of the vaccina, as well as thoſe who have already undergone the vaccina, is ſtill maintained by a few partizans. The ſources of this error we think may be ſatisfactorily demonſtrated in the preſent improved ſtate of the hiſtory of the vaccina :—1ſt, The characters of the cow-pock were not known even to the firſt promulgators of the vaccine inoculation, for want of ſufficient experience, and thence, an eruption of the inoculated part, in reality *not a vaccine one*, was miſtaken for *a vaccine one*. 2d, The vaccina, as above ſtated, very often occurs without any perceivable diſorder of the whole conſtitution. 3d, As a pimple or eruption can be excited, in a ſmall proportion of ſubjects by variolous matter, in the part inoculated, in a perſon who has already gone through the ſmall-pox, (the matter of which eruption it is atteſted can excite the ſmall-pox both conſtitutionally and locally in others,) ſo the vaccine matter, in a ſmall proportion

of ſubjects, can excite a pimple or eruption, which may be miſtaken for the real vaccine-pock; the matter of which *may, perhaps*, excite the vaccina in others, both conſtitutionally and locally. Nay, an affection of the axillary glands, and ſome fever may even be excited in ſuch caſes of inoculation of vaccine or variolous matter, ſo that it is only by a knowledge of the properties of the vaccine pock, and eſpecially by its progreſs or courſe, that ſuch eruptions can be diſtinguiſhed from the vaccine pock. 4th, In the ſmall-pox, there is almoſt always both perceivable fever, and on the body, eruptions; notwithſtanding, it is not allowed that there is evidence that this diſorder can be excited more than once: but of theſe criteria the fever is very often wanting, and the eruption, almoſt always in the vaccina. Here we ſhould conſider,—1ſt, The rarity of the caſes of local affection on inoculation, or ſuch as at all reſemble the cow-pock, in perſons who have had either the ſmall-pox or cow-pox. 2d, The equivocal properties of ſuch

local

local affections. 3d, That in particular, they are certainly eſſentially different in their courſe, duration, and ſcab, from the vaccine ones."

It does, however, appear from Mr. Ring's treatiſe on the cow-pox, that on ſome perſons who have previouſly had the ſmall-pox, a vaccine puſtule has been produced, the fluid of which has communicated the diſeaſe to others. We are therefore not warranted in ſaying that ſuch a thing never happens; but only that it happens too ſeldom to afford any reaſonable proſpect of keeping up the virus in that way.

Having thus aſcertained that perſons previouſly vaccinated, or who have already had the ſmall-pox, cannot be depended on for preſerving the diſeaſe, the next moſt promiſing mode that preſented itſelf was, to try whether it might not be kept up on the cow, the animal to which we are originally indebted for ſo great a bleſſing.

In my letter to the Board of the 9th of February 1803, above referred to, I mentioned, that, with matter from the human ſubject, I had ſucceeded in producing the diſeaſe in the cow, and in taking it from the inoculated cow back to the human ſubject. Doctor Sacco has given an account, and the only drawings which have been publiſhed, of the caſual cow-pox as he found it on the Milaneſe cows (5). But it did not then appear, from any of the books which I had ſeen on the ſubject, that any perſon had taken the trouble to inoculate the cow purpoſely with vaccine matter; and to make us acquainted with the reſult of ſuch experiment.

Mr. Ring's treatiſe, which has ſince fallen into my hands, informs us, however, that profeſſor Colman inoculated a cow from the human ſubject, and that ſhe took the diſeaſe; but the object of the experiment

(5) Medical and Phyſical Journal, vol. VII, and Philoſophical Magazine vol, XII.

was

was ſimply, to aſcertain the ſuſceptibility of the animal to a morbid poiſon generated in the human body, and we have no further account of it, than that ſuch ſuſceptibility did actually exiſt. The vaccine committee at Rheims made the ſame experiment; and even reſtored the diſeaſe to the human ſubject with matter produced by the cow: but they alſo have omitted to give us any account of the appearances of the inoculated parts in the animal.

WITHOUT meaning therefore, to aſſume to myſelf the ſmalleſt credit for the performance of an experiment, ſo obvious to conception, and ſo eaſy in execution, I ſhall content myſelf with merely ſtating what the appearances of the inoculated diſeaſe were in the cow; and what the conſequence of ſubſequent inoculations with the matter ſo produced.

ON the 28th January 1803, I inoculated a milch cow, by two punctures on each of the teats of the right ſide, with recent fluid vaccine

cine matter of the ſeventh day, taken at the inſtant of uſing it, leaving the other two teats to milk her by. For the firſt four days, nothing appeared but the marks of the punctures. On the fifth day, a ſmall circular tumor was obſervable round each of the punctures. Theſe tumours increaſed, and on the eighth day were from a quarter to half an inch in diameter; circular in form, ſurrounded with a ſlight inflammation, and in the center beginning to be converted into a flat ſmooth brown ſcab. The form of the tumor and the appearance of the ſcab altogether reſembled the inoculated puſtule on the human ſubject; but inſtead of being veſicular, and containing a fluid which exuded on being punctured, it had more the appearance of an elevation of the ſubſtance of the teat itſelf, of a ſpongy texture, from which a thin limpid fluid reſembling genuine vaccine matter was to be obtained, only by puſhing the point of a lancet under the ſcab. What general derangement the cow ſuffered in conſequence of this local affection I cannot ſay, the only one which appeared

to

to me being the loſs of her milk; and whether that was owing to its not being ſecreted, or to the omiſſion of milking, which her reſtiveneſs under the operation occaſioned to be diſcontinued, I am uncertain. After the eighth day the whole of the tumor was gradually converted into a ſcab, in form, colour, and conſiſtence, very much reſembling the vaccine one in the human ſubject, which by the twelfth or fourteenth day, fell off, leaving the ſkin whole underneath, with a pit or citatrix; in this circumſtance, differing widely from the veſicles of the caſual cow-pox, which are ſaid to eat deep into the fleſh of the teats. Upon the whole, the tumors above deſcribed, bore a great likeneſs to the veſicles and ſcabs repreſented in Doctor Sacco's drawings; though thoſe which I ſaw were certainly not veſicles, but, as I have ſaid, a kind of ſpongy elevation of the ſubſtance of the teat, and not unlike that kind of tumor which takes place upon applying a thimble exhauſted of air on any fleſhy part of the body.

On the eighth day of theſe appearances on the teats of the cow, I took ſome of the limpid fluid from below the ſcab, and with it inoculated a child, on whom at the proper time, the vaccine diſeaſe appeared ſo ſatisfactorily, that I took matter from him with which I continued to produce it indefinitely. This I conſidered as a great ſtep towards the preſervation of the virus in caſe of deficiency of patients. One circumſtance only occaſioned any doubt in my mind. The lancet with which I took the matter from the cow had been previouſly uſed in vaccine inoculation, and though it had been cleaned as much as lancets ever are after uſing them, it was juſt poſſible that enough of the fluid from the human ſubject might have remained on it to communicate the diſeaſe without acquiring any freſh infecting quality from the cow. To remove all doubt on the fact, I therefore inoculated another cow, and from her, with a lancet which had never been uſed before, I communicated the diſeaſe to a ſecond child, who alſo ſupplied me abundantly

dantly with genuine matter for farther inoculations. I now conſidered the cow as almoſt a certain reſource againſt the loſs of the diſeaſe; but farther trials proved that I was too ſanguine in my deductions. The third cow which I inoculated did not take the diſeaſe, though the inoculation was performed twice with unqueſtionable matter. The fourth failed once, but took it the ſecond time. And being now deſirous of trying whether I could paſs the diſeaſe through a ſeries of cows; I from the laſt inoculated a fifth cow, and two other children. On the children it failed, but on the teats of the cow it produced the tumors already deſcribed. This ſeemed to be another important ſtep, but how great was my diſappointment to find that five children ſuſceptible of the diſeaſe all failed to take it from inoculation with matter of the eighth day produced by the cow, the ſecond in the ſeries; and that four others inoculated with that of the ninth day alſo ſhewed no appearance of infection. I reinſtituted the experiment upon a ſixth and ſeventh cow, with no better ſucceſs. And

now, finding that my experiments were fruitleſs, troubleſome, and expenſive; (for by a convenient kind of logic, my Bramins made it out that my cows were now fit for nothing but to be made a preſent to my ſervants), I at length deſiſted from the farther proſecution of the ſubject. I ſhould apologize to the Board for taking up ſo much of its time with the detail of theſe experiments; but beſides being new, as I then believed them to be, I conſider it of ſome importance to ſhew that the expedient of recurring to the cow in deficiency of human ſubjects, however obvious to be thought of, and plauſible to recommend, is by no means a reſource on which any reliance can be placed for keeping up the vaccine diſeaſe. As far as my experience at preſent goes, then, I ſhould ſay, that, as a *dernier reſſort*, the vaccine virus may poſſibly be kept up for a week by inoculating a ſingle cow, but not for a longer time, through a ſeries of cows, and then taken back to the human ſubject. I do not however mean to deny that by more frequent trials one might even ſucceed in paſſing

fing it through two, three, or more cows in ſucceſſion, and then take it back to man; but merely, that the chance of ſucceſs is ſo ſmall, as not to entitle the experiment to any conſideration as one of the means of keeping up the diſeaſe.

THE only expedient therefore left for preſerving this grand prophylactic to India, where, as will be ſhewn preſently, the diſeaſe is not known to exiſt caſually among cattle, is that of inoculating in ſucceſſion a ſufficient number of freſh human ſubjects who have never before had the ſmall pox or cow pox. For the accompliſhment of this important purpoſe, a more judicious and excellent ſyſtem could not have been contrived, than that which is ſtated in the report to have been organized under the authority of the Governor General in Council, on the recommendation of the Medical Board; it being nearly impoſſible that the vaccine virus ſhould, all at once, fail in the hands of ſo many men experienced in its nature and competent to its management, otherwiſe than by

an abſolute refuſal on the part of the natives to ſuffer inoculation, or by ſome unforeſeen change in the quality of the matter, which, from its having already ſuſtained, all the changes of temperature incident to this climate, there does not now ſeem much reaſon to apprehend (6).

SECTION IV.

OF THE DIFFERENT METHODS OF TRANSMITTING VACCINE MATTER FROM PLACE TO PLACE.

OF the three methods principally in uſe for tranſmitting vaccine matter to a diſtance, viz. the armed lancet, the impregnated thread, and the glaſs plates charged with matter on their contiguous ſurfaces, our experience gives the preference to the laſt. After puncturing a vaccine puſtule of the ſeventh or eighth day in five or ſix different

(6) See Poſtſcript to the Appendix.

places

places ſo as to allow its contents to exude, I preſs down upon it two plates of glaſs about an inch ſquare. When the matter thus received upon the plates becomes dry in the ſhade, I apply their charged ſurfaces to each other, and retain them in cloſe contact by means of ſoftened candle wax, the heat of melted ſealing wax having been thought to injure the matter. When it is to be uſed, the dried virus is ſcraped up with the point of a good lancet, carrying a very ſmall particle of cold water, and inſerted into each arm, or, for greater ſecurity, into two places in each arm, as in inoculating for the ſmall pox. By this method the virus is frequently carried in an active ſtate to conſiderable diſtances; though it muſt be confeſſed that, in this and every other way, it is very apt to fail when once dried; and the greater the heat of the weather, the more liable it is to loſe its infecting quality This diminiſhed power of the virus is ſo remarkable in the hot months, that I have been often diſappointed in attempting to carry it from one houſe to another, though it may not

have been dried on the lancet for more than an hour. To avoid theſe frequent mortifications, it is now my general practice to carry a child with me in the eighth day of the diſeaſe, wherever I have private patients to inoculate at their own houſes.

THOUGH in general the plates of glaſs ſeem to be more ſucceſsful than threads, I muſt not omit to mention, that it was by threads that the virus has performed its longeſt ſtages in this country, viz. from Bagdad to Buſſora, Buſſora to Bombay; and Calcutta to Prince of Wales's Iſland.

WHEN matter is ſent on a lancet, it ſoon oxidates the point, and becomes inert. To obviate this inconvenience, Doctor Pearſon, contrived a lancet of platina, which does not ruſt; and Doctor de Carro, one of ivory with the ſame view. Doctor Jenner, with ſtill greater ſimplicity, has lately propoſed a ſtrong and ſharp thorn as an inſtrument well adapted for this purpoſe. I have juſt begun to try the effect of this ſuggeſtion by uſing

the

the thorns of a tree called Botch in Bengaleſe, and ſome ſpecies of Mimoſa and Opuntia, which I have obtained from the botanical garden; but my trials have not been made long enough to enable me to decide upon the merits of the propoſal. In uſing the thorn, I firſt make a puncture with a clean lancet, into which introducing the point of the armed thorn, I twirl it about ſo as to allow the matter to be moiſtened by the ſlight exudation of blood. By this means it is detached from the thorn, and left under the cuticle, where it is retained as by a valve. A quill cut ſmall at the point, or a ſharp ivory tooth-pick, may be uſed with the ſame intention.

Doctor Pearson's method of preſerving it in hydrogen gas cannot be conveniently practiſed here, for want of a proper apparatus for procuring the gas, and of phials calculated to retain it when made.

A method propoſed by Doctor De Carro, and ſaid by him to be "infallible, and preciſely

ciſely as eaſy for him who receives the virus as if he had to take it from a freſh puſtule," eſcaped my notice till I began to write this article. This method conſiſts in laying a ſmall piece of *charpie* or lint upon a ripe vaccine puſtule, previouſly opened by ſeveral punctures, ſo that it may fully charge itſelf with the fluid that exudes; the lint is then to be conveyed with the point of a pin or lancet into a little cavity made for it in a plate of glaſs. This plate is to be immediately covered with another of the ſame ſize with a plain ſurface, to be well tied up, and then dipt in a ſolution of ſealing-wax in ſpirit of wine, which completely excluding the air, no evaporation can take place, and the virus can be ſent to any diſtance, and kept fluid for any length of time. "I have myſelf," he adds, "uſed ſome coming from Hanover, and from Milan, which arrived as fluid at Vienna, as when it was put between the glaſſes." This ſeems a very promiſing method of preſerving the virus. I regret that it has ſo long eſcaped me, but I am now

getting

getting glaſſes prepared, with which I ſhall give it a fair and extenſive trial.

ANOTHER, and apparently a ſtill better method of preſerving the virus, is propoſed by Mr. Giraud, in the medical and phyſical Journal for May 1803, which has juſt come to my hands. This method conſiſts in uſing a ſmall glaſs bulb with a ſhank or tube to it of two to four inches in length. He firſt punctures a plump vaccine puſtule from which in a few ſeconds a ſmall drop of matter exudes, he then dips his bulb into a cup of boiling water, which expels the air; when, inſtantly applying the orifice of the tube to the puſtule, the matter is gradually drawn up into it as the bulb cools, and the tube is then immediately ſealed hermetically, by holding the end of it in the flame of a candle. "To make uſe of the matter thus preſerved, the extreme end of the tube muſt be broken, and the point of a lancet applied to it; at the ſame time, by gently approaching the bulb to the flame of a candle, the matter will, by the expanſion

of the air, be driven out and received on the point of the lancet. Or a puncture may be made on the arm, into which the end of the tube may be inſerted, and then the candle gently applied to the bulb."

I AM afraid it will not be poſſible to get any ſuch tubes made in this country, but the propoſal is ſo ingenious and ſo promiſing of ſucceſs, that I ſhall make a point of having a ſupply of them ſent out from England by the firſt opportunity; and in the mean time will try how near an approach we may be able to make to the conſtruction of them in Calcutta.

SECTION

SECTION V.

WHETHER THE VACCINE DISEASE EXISTS AMONG CATTLE IN INDIA; AND OF THE ALLEGED PREVIOUS KNOWLEDGE AND PLACTICE OF VACCINE INOCULATION BY THE BRAMINS.

THE account given in the preceding report of the formation of the vaccine eſtabliſhment is a full demonſtration, that every poſſible care has been taken by a wiſe and benevolent government, for perpetuating the bleſſings of vaccine inoculation to this quarter of the globe. Under ſuch a ſyſtem, it is the next thing to impoſſible that the virus ſhould ever be loſt to India; nevertheleſs, as ſuch an accident is juſt within the range of poſſibility, it would, in the event of ſo unexpected a diſaſter as the total loſs of the virus now in uſe, be a matter of great comfort to be aſſured, that the diſeaſe was to be found among cattle in ſome particular diſtrict of the extenſive regions of Hindoſtan, now under the dominion of the Britiſh government or its allies; and that on ſuch an emergency we might, conſequently, have

certain

certain recourſe to the cows of ſuch diſtrict for the renewal of our ſtock of infection.

The diſeaſe is known to exiſt caſually in cows, not only in Glouceſterſhire, from whence the knowledge of its invaluable quality was firſt promulgated, but in other counties of England and Scotland; in Ireland, Holſtein, Lombardy, Macedonia, and perhaps many other parts of Europe. It was therefore not an unpromiſing field of reſearch, to endeavour to diſcover it alſo in India. With a view to facilitate the acquiſition of this piece of information and ſome other particulars regarding vaccination, I inſerted in the Calcutta Gazette of the 7th July 1803, a ſeries of queries, hoping that the anſwers I might receive to them would either explicitly ſettle the point in queſtion, or lead to farther enquiries with better proſpect of ſucceſs. My queries were addreſſed, not to medical men only, but, to all who felt intereſted in the introduction of vaccine inoculation, and who, from their reſidence in particular parts of the country

and

and their knowledge of the manners and practices of the natives, might be ſuppoſed capable of throwing any light on the ſubject. The query which related to this particular point was propoſed in the following terms.

" QUERY 8. HAVE you any authentic information that the diſeaſe called cow-pox, as characteriſed by Doctor JENNER and other late writers, exiſts among cows in any part of India? Or, that the practice of transferring the diſeaſe from the cow to the human ſubject, and ſubſequently from human ſubject to human ſubject, for the purpoſe of preventing the ſmall-pox, was ever adopted in any part of the country; or, that the fact, that a certain matter originating in the teats or udder of the cow poſſeſſed ſuch a power, was ever known by the Bramins, or any other claſs of natives, previouſly to the promulgation of Doctor JENNER's diſcovery?"

Now, as the Calcutta Gazette is a paper which

which falls into the hands of almoſt every European in the country, and as the queries were repeated by ſeveral of the other weekly journals, it will readily be admitted, I hope, that ſuch an addreſs to the public was the moſt likely way of drawing forth any information that might be poſſeſſed by individuals on ſo curious and intereſting a ſubject. The anſwers to my queries were not ſo numerous as might have been expected. Several gentlemen, however, did take the trouble to anſwer them at conſiderable length; but I am ſorry to ſay, that their communications are all completely deſtitute of any ſatisfactory proof of the exiſtence of the vaccine diſeaſe among cows, in any part of India. Some of them do mention an eruptive diſeaſe of cows, which the natives, in common with other eruptive diſeaſes, diſtinguiſh by the general name of *gootee*, and which proves fatal to many of them. This is obviouſly not the diſeaſe in queſtion, which, though troubleſome in a dairy, under the idea of impurity, and from its infecting quality, is never known to kill the cow. What

would

would be the effect of inoculating the human ſubject with the product of a diſeaſe which kills the brute, it is impoſſible *à priori* to ſay. The experiment, I think, is by no means deſirable; though I cannot help mentioning, that it had a very narrow eſcape of being tried, about the time the real vaccine diſeaſe was firſt imported into Bengal.

With reſpect to the other branch of the queſtion, whether the Bramins have now, or ever had, any knowledge of the diſeaſe and its properties; it may be remarked that when the vaccine inoculation firſt became the ſubject of converſation in this country, it ſuffered the fate of other new diſcoveries. When the proofs in its favor became too numerous and too imperious to allow its prophylactic power to be any longer doubted, it was then by many found out not to be new. Thoſe who will have it that the Bramins know every thing, admitted indeed that it might be new in Europe; but aſſerted that the Bramin inoculators of this

country had been acquainted with it from time immemorial; and that to their frequent practice of it was to be aſcribed their ſingular ſucceſs in *ſmall-pox inoculation*(7). This aſſertion, however, we are now well aſſured, was founded in complete ignorance of the ſpecific nature of both diſeaſes, which it is well known cannot by any contrivance be inoculated in ſuch a way as that one ſhall paſs for the other. A circumſtance, however, took place not long after our obtaining poſſeſſion of the diſeaſe, which did ſeem at firſt ſight to countenance the opinion above maintained; and which I conſider it my duty here to ſtate in a fair and candid manner.

Mr. Gillman, ſurgeon to the 8th Regiment Native Infantry, ſtationed at Bareilly, making inquiries on this ſubject, got poſſeſſion of a Shanſcrit manuſcript, which was ſaid to contain an account of the inocu-

(7) That even this boaſted ſucceſs is nothing extraordinary —Vide Report p. 27.

lation

lation with matter originating in the cow, for the purpoſe of deſtroying the ſuſceptibility to ſmall-pox. This manuſcript Mr. Gillman ſent down to Mr. Munro at Calcutta in April laſt, by whom it was ſubmitted to the peruſal of a Gentelman of diſtinguiſhed eminence in Shanſcrit literature, who gives the following account and tranſlation of it.

" THE leaves ſent by Mr. Gillman contain an extract from a work entitled *Sud'haſangraha*, compoſed by a phyſician named *Mahádéva*, under the patronage of *Rájá Rájá ſinha*. This extract contains a chapter on the *Maſúricá* (in Hindi called *Maſuria* or *Maſooría*), which is, I believe, a ſort of chicken-pox. Towards the end, the author ſeems to have introduced other topics; and immediately after directing leeches to be applied to bad ſores, he proceeds thus:

" TAKING the matter (pùya) of pimples (granthi), which are naturally produced on

the udders of cows, carefully preſerve it; and, before the breaking out of the ſmall-pox (ſitala), making, with a ſmall inſtrument, a ſmall puncture, (like that made by a gnat), in a child's limb, introduce into the blood as much of that matter, as is meaſured by the fourth part of a *Racti*; thus the wiſe phyſician renders the child ſecure from the breaking out of the ſmall-pox."

"If this paſſage," ſays the tranſlator, "has not been interpolated by the *Hindoo* phyſician, who communicated it to Mr. Gillman, vaccination muſt have been known to the *Hindus* before Doctor JENNER diſcovered it. Other copies of the ſame work ſhould be ſought for and examined, to determine whether the paſſage be genuine."

THE paſſage above quoted looks extremely ſuſpicious, not only from the original having been produced in a part of the country where even inoculation for ſmall-pox is al-

moſt

moſt unknown, but from the manner of introducing the matter being that which is uſed by European practitioners only, and not like that of the inoculating Bramins in Bengal, the only part of the country where ſmall-pox inoculation is much practiſed. Theſe circumſtances alone were ſufficient to create a diſtruſt as to the authenticity of the extract. Other copies of the book were therefore ſought for, and luckily procured. The Shanſcrit word *Sud'haſangraha* ſignifies, it ſeems, a collection or *recueil* of detached portions of information on different ſubjects, collected from authors or verbal communications as it may happen; ſimilar, it may be ſuppoſed, to what our receipt books, handmaids to the arts &c. were, before the different heads of ſcience and art were methodiſed and digeſted into regular Encyclopœdias. When the extract in queſtion was collated with other copies of the *Sud'haſangraha* procured in Bengal, nothing of the paſſage relating to vaccination was to be found in the latter, and I accordingly obtained from Mr. Blaquiere, a gentleman perfectly

perfectly competent to form a correct judgment on the ſubject, the following ſtatement of the impreſſion he received from the collation of the two manuſcripts.

"I FOUND the manuſcript you ſent me agree nearly word for word with a chapter of the *Vanga Sena Chicitſa Meharnava*, until the mention of the vaccination. The concluſion I formed was, that the manuſcript was thus far a copy of the ſaid chapter, and all beyond it on the ſubject of vaccination, interpolation. It is much to be lamented that ſuch a bleſſing was not introduced into this country under ſome other name."

THE Vanga Sena Chicitſa Meharnava, mentioned above, is a chapter of the Sudhaſangraha, expreſsly on the ſubject of medicine, in which it may fairly be concluded the vaccine diſeaſe would have been noticed, if noticed at all. Mr. Forſter, and Mr. Bentley, two other gentlemen well acquainted with Hindoo literature, alſo collated the manuſcripts, with the ſame reſult as Mr. Blaquiere;

Blaquiere; and I have their farther authority for saying, that they have examined the two most ancient and most esteemed Shanscrit books, composed professedly on the subject of Nosology, called the Needan and Churuck, without being able to discover the slightest trace of a previous knowledge of the vaccine disease among the Hindoos, though they both treat largely of the small pox under the name of *Bussunt* and *Sitala*.

From the above respectable testimonies, it can scarcely, I think, be doubted, that the extract forwarded by Mr. Gillman, is an impudent forgery interpolated into a Shanscrit book, by one of those frauds so commonly and so dexterously committed by the Hindoo literati, for the purpose of supporting the claims of the Bramins to the prior possession of all kinds of science.

Though I have not succeeded in discovering the cow-pox to exist indigenously in any part of Hindostan, I do not pretend that it may not at some future period be found

found among the cows of this country ; and, for the reaſons before mentioned, I ſhould conſider it a very happy circumſtance if ſuch diſcovery were made. But, independently of the detection of the impoſition attempted to be put upon us by the forged Shanſcrit manuſcript, we now, I think, poſſeſs ſufficient knowledge of the diſeaſe, of the diſpoſition of the people towards it, and of the circumſtances neceſſary for preſerving the virus, to be aſſured that the Bramins never knew the practice of vaccine inoculation, and that, if they had received ſuch a *boon* from heaven, the chance is very much againſt their being able to keep up the diſeaſe for a ſingle inoculating ſeaſon. But allowing that they had ſucceeded ſo far, they muſt inevitably have loſt it during the eight or nine months in the year in which they never practiſe inoculation. Beſides, ſmall pox inoculation by the natives is a very partial practice in India, being confined almoſt entirely to Bengal ; where the vaccine could not have been known, becauſe the Bengaleſe inoculators, ſo far from profeſſing

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any anterior knowledge of it, make a ſtand againſt its introduction now, for the very reaſon that it does come from the cow, which they could not with any pretence of conſiſtency do, and at the ſame time maintain a claim to priority of diſcovery. This is what Mr. Blaquiere alludes to, in lamenting that ſo great a bleſſing had not been introduced into India, under ſome other name than that of cow-pox.

All the flattering hopes which were indulged by phyſicians and philanthropiſts both in Europe and in this country, of the eager adoption of the vaccine inoculation by the Hindoos in conſequence of their veneration for the cow, have, I am ſorry to ſay, proved completely fallacious. The aſſertions of my inoculating Bramins; converſation with many of the better informed Hindoos in Calcutta; and the letters of many of my correſpondents in different parts of the country, all concur in repreſenting this as a very ſtrong objection, whether real or pretended, to the general adoption of the

new practice. This adverſe fact in the hiſtory of the progreſs of vaccine inoculation has not, I obſerve, yet reached England; on the contrary, a very late medical periodical work, ſpeaking of Doctor Jenner, and his correſpondents, ſays "From Bengal, he alſo learns, that the Hindoos receive it with the greateſt ardor, from the veneration theſe people pay to the cow, as well as from the ſecurity they find in it from the ſmall pox (8)."

SINCE writing the above, a paper has come into my hands, containing ſomething both for and againſt the probability of the vaccine diſeaſe being known in India, which I ſhall therefore beg leave here to inſert.

"An old Bramin of Barraſſet, very well learned, looked over ſeveral Shanſcrit books, but he could not find that the diſorder called

(8) Medical and Phyſical Journal for July 1803.

Cow

Gow Buſſunt, or cow ſmall-pox, was capable of being communicated; nor could he find that any of the *Dhununturries* ever conſidered it to have been applicable to the prevention of ſmall-pox.

"THE doctors and all old men of Bowannypore ſay, that they never heard ſuch a thing in their lives. Two of the doctors carefully looked over the *great* medical book, called *Neydan*, but they could not find any where, that it was ever conſidered by any of the *Chickutchucks* in former times as capable of being communicated to the human ſubject.

"A FARMER, about fifty years old, reſiding in the diſtrict of Burdwan, ſays, that about fifteen years ago all his cows and bullocks were affected with this diſorder, and they all died, except one of the cows who had the diſorder on the teats only; when a Doctor of Biſnopore, having heard that all his cows and bullocks were dying by the *gow buſſunt*, came to his houſe, and

after living three days at his houſe (until the diſorder on the teats was ripened) he took the *peeb* out of the *gow buſſunt* on a little bit of cotton, ſaying, that he would inoculate a child of a great man with it, as it would not put him into the danger of the ſmall-pox, but a very ſtrong fever for three days, and thereby he would be freed from the danger of the ſmall-pox while he would live."

It is more than probable, I think, that the above account, as well as the forged manuſcript, was ſuggeſted by the queſtions of the perſon who made the enquiry. However, as it is the only alleged fact of the kind that has come to my knowledge with any ſemblance of probability, I ſhall not fail to proſecute the inveſtigation farther in the diſtrict in which it is ſaid to have happened, and at a future period communicate to the Board the reſult of my enquiries. I muſt alſo beg leave to reſerve for a ſubſequent communication, any information I may be able to obtain reſpecting the exiſtence

tence of the diſeaſe called *greaſe*, among the horſes in India. I have aſked many perſons in Calcutta converſant with the veterinary art, either profeſſionally or as amateurs, whether they had ever ſeen the *greaſe* in this country; to which they have all anſwered in the negative.

The origin of morbid poiſons is a ſubject involved in very great obſcurity. No circumſtance relating to the vaccine diſeaſe was leſs believed at firſt, than the theory of the great diſcoverer, aſcribing its origin to the *greaſe* of horſes heels. It was ſtrongly reaſoned againſt, from the circumſtance of the vaccine being known in Ireland, where the ſame perſons are not employed in dreſſing the horſes and in milking the cows; and many experiments were made to convey it from the horſe to the cow by direct inoculation, without ſucceſs. At length, however, Doctor Loy did ſucceed in producing the true vaccine diſeaſe in the human ſubject from the greaſe of horſes, both with and without the intervention of the cow.

Doctor

Doctor Loy's experiments are admitted in their fulleſt extent by Doctor De Carro, while by others they are thought to require the confirmation of farther trials (9). Doctor De Carro, in a letter to Doctor Milne at Buſhire, dated 27th July 1803, informs him, that Doctor Lafont at Salonica had alſo ſucceeded in producing the vaccine diſeaſe from greaſe. The paragraph is as follows:

"A French Phyſician eſtabliſhed at Salonica in Macedonia, Doctor Lafont, has been very ſucceſsful with his experiments on the greaſe. He has produced the cow-pox with the matter of that diſeaſe of horſes. Farriers of that country know it perfectly well, and what is very remarkable, they diſtinguiſh three ſpecies of it, the Phlegmonous, the Scrophulous, and the Variolous. It was the laſt ſpecies that produced the cow-pox on children; the two former, when inoculated, have occaſioned much fever;

(9) Annals of Medicine, for 1801.

but

but the latter hath produced the diſeaſe, as mild, as uſually. This diſtinction of the greaſe appears to me very nice, and ſhews more medical and veterinary knowledge than one would expect from a country where arts and ſciences are not now in a flouriſhing ſtate. The horſe from which Doctor Lafont took his matter had four little ulcers on the heels, legs and breaſt, and an eruption of pimples much ſimilar to the ſmall-pox. This phenomenon ſeems to give ſome weight to my hypotheſis, of the origin of the ſmall-pox being derived from ſome variety of the greaſe."

WHATEVER faith medical men may chooſe to place on theſe experiments, and whatever may be their opinion reſpecting Doctor De Carro's hypotheſis of the origin of ſmall-pox being derived from ſome variety of greaſe; the relation of them is a ſufficient incitement to the inſtitution of farther enquiries and experiments on ſo curious and intereſting a ſubject. To this object ſome part of my attention ſhall be devoted

devoted, between this time and that at which I may have the honor to preſent a ſecond Report to the Board.

SECTION VI.

OF THE SMALL-POX IN BENGAL, AND OF SMALL-POX INOCULATION AS PRACTISED BY THE BRAMINS.

THE ſmall-pox has not prevailed, epidemically, in Calcutta and its neighbourhood, ſince the introduction of vaccine inoculation, owing, I have no doubt, to the judicious prohibition of variolous inoculation by the Police, ever ſince that time. A few ſporadic caſes have, however, made their appearance. From one of theſe, I performed my teſt experiments laſt year, as already related; and, as I was anxious repeat them this ſeaſon, I have enquired for others, but without ſucceſs; though my Bramin informs me, that a few natives have taken the diſeaſe naturally and died of it; and that

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ſome of the better ſort of Hindoos have had variolous inoculation performed clandeſtinely upon perſons of their own families.

Some time in January my Bramin came to me with marks of great diſappointment and concern in his countenance, and told me, that a boy who had been vaccinated laſt November had lately been ſeized with ſmall-pox, and that he had ſeen him that day with a very full eruption of them all over his body. I immediately turned to my regiſter, and found that, even if the alleged fact were true it could not affect the character of vaccine inoculation, becauſe oppoſite to the name of the boy was the mark of doubtful ſucceſs; and, as he had not returned for ſubſequent examination, it could not be ſaid whether he had been duly vaccinated or not. However, to ſatisfy myſelf of the truth of the allegation, I accompanied the Bramin to the houſe of the ſuppoſed ſmall pox patient, and found him indeed very fully covered with an eruption, but ſo obviouſly the chicken pox,

which has been very prevalent for the laſt two months, that I wonder how the Bramin could have been miſtaken. I have been particular in ſtating this circumſtance, in the firſt place, to ſhew, that there would be no backwardneſs in bringing forward any fact to the diſcredit of vaccine inoculation if any ſuch exiſted; and in the next, to prove how little theſe people really know about the diſeaſes they pretend to treat; for here was a man, who had been occupied all his life in the buſineſs of inoculating ſmall pox, ſo entirely ignorant of the true nature of that diſeaſe, as to miſtake the chicken pox for it. If matter had been wanted for ſmall pox inoculation, he would of courſe have had no heſitation in producing the contents of theſe puſtules as variolous virus. The child ſo inoculated would have had a local affection, and probably ſome puſtules; which being believed to be a ſufficient inoculation, the child on ſubſequent expoſure to ſmall pox contagion, which no care would be taken to prevent, would catch the diſeaſe, and probably die:—

a lamentable accident which has actually happened, in ſeveral inſtances, both in this country and in Europe; owing, I have no doubt, to a miſtake committed in the kind of matter employed in inoculation. I mean alſo, from the circumſtance above related, to deduce an argument againſt ſoon committing the vaccine diſeaſe to the management of natives, at any diſtance from immediate European ſuperintendence. I have great doubts of their capacity to keep it up in a genuine ſtate, if they were willing (10); and none at all of their poſſeſſing cunning enough to vitiate it on purpoſe, in order to bring it into diſcredit and diſuſe. Several of them have come to me, requeſting matter to inoculate with. I have given them every encouragement, but have always told them to bring a few children to me, in the firſt place, to be inoculated, in order that they might learn how to perform the operation, and how to diſtinguiſh and preſerve the genuine diſeaſe. They have gone away

(10) See extract from Mr. Maſon's letter in the Report.

under a promiſe to return the next inoculating day, but I have never ſeen one of them a ſecond time. Such conduct on the part of the Bramin inoculators, I apprehend, I am warranted in ſaying, looks extremely like ſiniſter deſign.

In the ſpirit of miſtaken humanity, it may appear to ſome, that it is hard upon the inoculators to prohibit the exerciſe of an art by which ſo many individuals gain a livelihood. This at firſt ſight ſeems plauſible, but when it is conſidered how eaſily they might compenſate to themſelves this temporary ſuſpenſion of emolument, by ſhewing a proper diſpoſition to the adoption of the vaccine inſtead of the variolous inocolati n, and which, after due inſtruction, they might practiſe, for the ſame fees they have been accuſtomed to receive for inoculating ſmall-pox; the obſervation, I apprehend, will fall to the ground, as far as regards humanity to the inoculators: and in a public point of view, there can be no queſtion, between the humanity of prohibiting and permitting

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ſmall pox inoculation. In Britain, where the inoculation of ſmall-pox and its caſual occurrence formed a lucrative field of employment to the medical practitioner, no ſenſible and conſcientious man ever thought of continuing the practice of ſmall-pox inoculation, after that of the vaccine was fully proved to poſſeſs the qualities aſcribed to it. No renumeration was ever looked for by them. They chearfully gave up a very profitable branch of buſineſs, in the contemplation of the benefit accruing to the public from the extenſion of this happy diſcovery. No ſuch laudable and diſintereſted conduct can, however, be expected from an ignorant Bengaleſe inoculator; to whoſe ſelfiſh and ſordid preceptions, as to thoſe of moſt of his countrymen, the idea of a *public* is, I believe, totally unintelligible.

It has been proved that the public has already benefited very greatly by the police having prohibited ſmall pox inoculation in Calcutta, and its immediate neighbourhood.

bourhood. Every year anterior to 1803, the Bramins were in the practice of introducing the ſmall-pox into this metropolis, by inoculation, in January or February. They inoculated all who could pay them, regardleſs how near their patients were to thoſe who either could not from indigence, or would not from principle, be inoculated; by this means ſpreading on every ſide a fatal peſtilence, which annually purſued its courſe of miſery and death. Happily the two laſt inoculating ſeaſons have paſſed by, without bringing with them this dreadful ſcourge of humanity. European families have been freed from thoſe terrors which were always created by the prevalence of the ſmall-pox, in conſequence of the careleſſneſs of ſervants about introducing infection, where there were children uninoculated. Thouſands of natives have been reſcued from an untimely grave; and the vaccine diſeaſe has obtained ſubjects, on whom to demonſtrate its inimitable innocence, benignity, and power; as well as to afford the means of preſerving ſo great a bleſſing to this quarter of

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the globe. All which advantages would be inevitably and irretrievably loſt, by reſorting to the former ſyſtem of annual and indiſcriminate inoculation of the ſmall pox.

THESE obſervations, I truſt, are ſufficient to ſhew, that the prohibition of ſmall pox inoculation, though on a ſuperficial view of the queſtion it may appear a harſh and unconciliating meaſure, is, in reality, a regulation by which the cauſe of humanity is moſt effectually ſerved; and which is abſolutely eſſential to the very exiſtence of the vaccine diſeaſe in this country. If any modification of the ſyſtem were to be adopted, in conſequence of its being impoſſible that the vaccine diſeaſe ſhould immediately extend its benefits all over the country; perhaps it might not be improper to allow ſmall pox inoculation to be performed for a limited time in the country, but on no account, within ten miles of any large and populous town. It would there do much leſs miſchief, becauſe it is only in populous places that the diſeaſe can extend widely by

means

means of contagion. And yet there may be an objection even to this modification, as a measure tending to perpetuate small pox contagion on the earth. For if small pox inoculation were entirely, and in every part of the world, discontinued, the sources of variolous infection would be almost dried up, and the growing progress of the vaccine would nearly deprive it of subjects to act upon, if it should casually appear. And thus, will it be called too sanguine, to hope that the small pox may at length be finally annihilated, and its name for ever erased from the tedious catalogue of human misery?

It would be a curious subject of enquiry to endeavour to discover at what time the fatal pestilence of small pox first appeared in Hindostan; but I am afraid the historical documents we at present possess are insufficient for the solution of the question. Mr. Holwell, who published an account of the practice of inoculation in Bengal endeavours to make it appear, that the disease was known in Hindostan upwards of three thousand

thouſand years ago. In one of the Bhedes, to which he aſſigns a date, of 3366 years before the time at which he wrote, a certain form of ſacrifice and *poojah* is enjoined to be performed to the *Gootee ka Tagooran*, or goddeſs of ſpots, at the time when the ſmall-pox uſually becomes epidemic; and from hence he concludes, that the ſmall-pox muſt have been known at the time thoſe ſcriptures were written. But, independently of the reliance here placed upon Hindoo Chronology; upon the *Gootee ka Tagooran* being the divinity of all other eruptive diſeaſes, as well as of the ſmall-pox; and upon our having no deſcription of the diſeaſe by which we can aſcertain it to be the ſame; Doctor Woodville, from the conſideration of certain circumſtances renders it extremely improbable, that the diſeaſe ſhould have exiſted for ſo great a length of time in Hindoſtan without being conveyed to other parts of the world. The ſmall-pox is not a diſeaſe to remain ſtationary in any particular region. Its ravages, ſince it was firſt known to Europe, have never failed to follow cloſe

upon the heels of adventure, war and commerce. If it had prevailed in India, at the time of Alexander's invaſion, is it credible that his immenſe army could have eſcaped it? Or that, at a later period, it would not have found its way to Rome, by means of the commerce eſtabliſhed between India and that capital of the world, by the way of Alexandria? That neither of theſe things happened, I agree with Doctor Woodville in thinking almoſt certain, from the utter ſilence of all the ancient Greek and Roman phyſicians on the ſubject; and even of Galen, who ſtudied phyſick at Alexandria ſo late as the ſecond century of the Chriſtian era; and would undoubtedly have noticed the diſeaſe, had it prevailed in that city, or been known to his contemporaries, during his ſtay there. It is therefore moſt probable that the diſeaſe was unknown in India till after its appearance in Arabia, which the beſt authorities ſtate to have happened at the ſiege of Mecca, correſpondent with the era of the birth of Mahomed, fixed by Mr. Gibbon to the year 569; and the principal

commerce of the eaſt being then carried on by the Arabians, it could not be long before the diſeaſe made its way to all parts of Aſia.

At what time, or in what part of the world inoculation for the ſmall-pox was firſt practiſed, ſeems to be wholly unknown. Vague report ſays, in Circaſſia, but the aſſertion is ſupported by no authority. The weſtern parts of Europe certainly obtained it from Conſtantinople, where, however, it had not been known half a century. In China, and in Hindoſtan, or more properly Bengal, it is believed to be an immemorial cuſtom; but the different manner of performing the operation in the two countries renders it improbable that the practice could have been adopted from a common origin. In China, they introduce into the noſtrils, plugs charged with variolous virus; in Bengal, they inoculate the legs or arms. Mr. Holwell has given a full account of the practice of the Bramins, which, as it

agrees pretty closely with what I have myself seen, and heard from different parts of the country, I shall here beg leave to transcribe.

"INOCULATION is performed in Hindostan by a particular tribe of Bramins, who are delegated annually for this service, from the different colleges of Bindoobund, Eleabas, Benares, &c. over all the distant provinces. Dividing themselves into small parties of three or four each, they plan their travelling circuits in such wise, as to arrive at the places of their respective destination some weeks before the usual return of the disease. They arrive commonly in the Bengal provinces early in February; although, in some years, they do not begin to inoculate before March, deferring it until they consider the state of the season, and acquire information of the state of the distemper. The inhabitants of Bengal, knowing the usual time when the inoculating Bramins annually return, observe strictly the regimen enjoined, whether they deter-

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mine to be inoculated or not; this preparation consists only in abstaining for a month from fish, milk, and ghee (a kind of butter made generally of buffalo's milk). The prohibition of fish respects only the native Portuguese and Mahomedans, who abound in every province of the empire. When the Bramins begin to inoculate, they pass from house to house, and operate at the door, refusing to inoculate any who have not, on a strict scrutiny, duly observed the preparatory course enjoined them. It is no uncommon thing for them to ask the parents how many pocks they choose the children should have. Vanity, we should think, urged a question on a matter seemingly so uncertain in the issue; but true it is, that they hardly ever exceed or are deficient in the number required. They inoculate indifferently on any part; but if left to their choice, they prefer the outside of the arm, midway between the wrist and elbow, and the shoulders for the females. Previous to the operation, the operator takes a piece of cloth in his hand (which becomes his perquisite

quiſite if the family is opulent), and with it gives a dry friction upon the part intended for inoculation, for the ſpace of eight or ten minutes; then, with a ſmall inſtrument he wounds by many ſlight touches, about the compaſs of a ſilver groat, juſt making the ſmalleſt appearance of blood. Then opening a linen double rag (which he always keeps in a cloth round his waiſt), he takes from thence a ſmall pledget of cotton charged with the variolous matter, which he moiſtens with two or three drops of the Ganges water, and applies it to the wound, fixing it on with a ſlight bandage, and ordering it to remain on for ſix hours without being moved; then the bandage to be taken off, and the pledget to remain until it falls off itſelf. The cotton, which he preſerves in a double callico rag, is ſaturated with matter from the inoculated puſtules of the preceding year; for they never inoculate with freſh matter, nor with matter from the diſeaſe caught in the natural way, however diſtinct and mild the ſpecies. Early in the morning ſucceeding the operation,

four collons (an earthen pot containing about two gallons) of cold water are ordered to be thrown over the patient from the head downwards, and to be repeated every morning and evening until the fever comes on, which uſually is about the cloſe of the ſixth day from the inoculation; then to deſiſt until the appearance of the eruption (about three days); and then to purſue the cold bathing, as before, through the courſe of the diſeaſe, and until the ſcabs of the puſtules drop off. They are ordered to open all the puſtules with a ſharp pointed thorn as ſoon as they begin to change their colour, and whilſt the matter continues in a fluid ſtate. Confinement to the houſe is abſolutely forbid, and the inoculated are ordered to be expoſed to every air that blows; and the utmoſt indulgence they are allowed, when the fever comes on, is to be laid upon a mat at the door. But in fact the eruptive fever is generally ſo inconſiderable and trifling as very ſeldom to require this indulgence. Their regimen is ordered to conſiſt of all the refrigerating

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things the climate and ſeaſon produces; as plantains, ſugar-canes, water-melons, rice, gruel made of white poppy ſeeds, and cold water or thin rice gruel for their ordinary drink. Theſe inſtructions being given, and an injunction laid on the patients to make a thankſgiving *poojah*, or offering, to the Goddeſs on their recovery; the operator takes his fee, which from the poor is a *pŭn of cowries*, equal to about one penny ſterling, and goes on to another door, down one ſide of the ſtreet, and up on the other, and is thus employed from morning till night, inoculating ſome times eight or ten in a houſe."

The preceding account by Mr. Holwell, written, I ſuppoſe, about the middle of laſt century, agrees, in general pretty nearly, with the ſtate of ſmall-pox inoculation by the Bramins at the preſent period; though in ſome diſtricts I have learnt that it is not the Bramins who inoculate, but people of the loweſt caſt. This, I am informed by Mr. Glas, is the caſe in the zillah of Boglepore.

At

At what time, or from whence, the practice of ſmall-pox inoculation was firſt introduced into Bengal, is equally unknown with the early hiſtory of the diſeaſe itſelf in India. The Hindoos of courſe make it a matter of incredible antiquity. But if one may reaſon from circumſtances, it appears to me to be very queſtionable, whether it has been known here much longer than in England. The practice of ſmall-pox inoculation on this ſide of India is confined excluſively to Bengal. About the year 1765, a gentleman at Patna, who was deſirous of giving ſome account of it to a correſpondent in Europe, could find no one in Behar who knew any thing of the matter, and was obliged to derive his information from a Bengaleſe inoculator. Even at this day it is not practiſed in Oude, or the Dooab; and at Allahabad, (the city deſignated by Mr. Holwell under the name of Eleabas, as the head quarters of one body of inoculators) though it is now known to the natives, it is but little uſed; and always by Bramins from Behar and Bengal. In Napaul, on the

northern frontier of the British dominions, it is altogether unknown, and equally so at Nagpore, Hyderabad and Myfore. Is it probable that fo eafy a method of ameliorating a fatal difeafe would have made fo little progrefs, if it had been long known in Bengal? I might even afk, is it probable that fuch an improvement in medicine would have efcaped the notice of our medical men, belonging to fhips, and fettled in factories, (fuch men as Broughton and Hamilton, for inftance) in the end of the feventeenth, and beginning of the eighteenth century, had the practice been in their days common in Bengal? And fhould we not then have been indebted to Bengal, rather than to Turkey, for fo eafy a method of faving human life? Thefe are queftions which it is not eafy at prefent to anfwer, and which I am aware, it may be faid, it is, in this place, unneceffary to afk. The fubject, however, appears to me, to be curious and intereffing in the hiftory of medical improvement; and as fuch, I fhall probably take a future opportunity of refuming it, better prepared for the difcuffion.

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In the mean time I may conclude this article by remarking, that the Bramin inoculators are not now ſo moderate in their charges, as they were in Mr. Holwell's time: at leaſt this is true in and about Calcutta; and that, inſtead of waiting for the diſeaſe to break out ſpontaneouſly, which it probably would not do above once in ten or fifteen years, they commence their operations at a certain time every year; and thus artificially produce an epidemic, which by its frequent recurrence, proves much more deſtructive to the community than if inoculation had been entirely aboliſhed, and the caſual diſeaſe left to the chance of appearing perhaps once in ten, fifteen, or twenty years.

SECTION VII.

MISCELLANEOUS OBSERVATIONS ON THE VACCINE DISEASE IN BENGAL, WHICH HAVE EITHER BEEN OMITTED, OR DO NOT RANGE THEMSELVES NATURALLY UNDER ANY OF THE FOREGOING HEADS.

ON comparing what was done in England in the firſt year of vaccine inoculation with the preceding report, which includes very little more than one year, the reſult will, it is hoped, appear not unfavorable to the practice in Bengal.

In England four thouſand perſons only were inoculated during the firſt year: in our regiſter we enumerate at leaſt eleven thouſand.

At the vaccine inſtitution in London, eſtabliſhed principally for the purpoſe of making obſervations on the diſeaſe and preſerving a ſource of genuine virus, 1202 only were inoculated during the firſt three years:

in

in Bengal, with views exactly similar, and I truſt, not leſs fully accompliſhed, three of the vaccine ſtations, which may be compared to as many vaccine inſtitutions, and one of the ſubordinate ſtations, exhibit a greater number of patients in one year than the London inſtitution does in three.

We have kept regular regiſters of caſes, ſcarcely differing in form, and not at all in ſubſtance, from thoſe deſcribed by Doctor Pearſon.

We have avoided entirely the production of thoſe anomalous caſes, which were ſo perplexing to practitioners at home, and ſo injurious to the fame of the new practice, in the early period of vaccination.

A few caſes with puſtules have been ſeen, but ſo rarely, as to deſerve no notice in the enumeration of the appearances of the diſeaſe. I have myſelf ſeen only two caſes of puſtules, and in each of them only a ſingle puſtule; in one on the chin, and in the other

other within the circle of the areola: except in cases of itch, where the child first scratching the vaccine pustule, and then the itchy pimples, certainly does communicate to them a vaccine action and pustular appearance, ending often in ulcerous sores. Itch, however, forms no objection to the vaccine inoculation, farther than as the child will generally destroy the pustule by scratching, such subjects should be avoided when we wish to preserve a supply of matter. If the eruptions are near the eyes, however, it would be better not to inoculate at all until they are cured, as in one case under the care of Doctor De Carro, the scratching of such eruptions with fingers embued with vaccine matter produced so much inflammation as to occasion very serious alarm for the loss of sight.

No fatal or troublesome accident whatever has occurred during our vaccine practice, that can be imputed to the inoculation; nor do I believe any such accident can occur from vaccination simply. One

child

child at Dacca, who had been inoculated with vaccine fluid was ſeized with the natural ſmall-pox before the vaccine inoculation had arrived at maturity, and died (11): but this is nothing more than would have happened if the child had not been vaccinated; and though ſuch a diſaſter would no doubt militate againſt vaccine inoculation among the ignorant, it is perfectly capable of being explained in a ſatisfactory manner to any unprejudiced perſon of common underſtanding.

We have inoculated at all ages from one month to fifty years old, without the ſmalleſt inconvenience. Teething forms no obſtacle, and we have had no bad arms requiring ſurgical treatment.

We have inoculated during the hooping cough without any obvious effect on either diſeaſe.

The chicken pox has occurred during vaccination, and purſued its courſe uninter-

(11) See Mr. Tutin's letter, No. 7.

ruptedly,

ruptedly, and the meaſles ſoon afterwards in its uſual form.

Some have obſerved a kind of eruption of red pimples, and ſometimes of little elevated ſpots with minute horny points, (which I at firſt conſidered as vaccinated muſquito's bites), in two or three weeks after vaccination; but theſe are harmleſs, and as children in this climate are particularly obnoxious to cutaneous eruptions, it may be doubted whether they at all depend on vaccination.

What power the vaccine diſeaſe may have over the conſtitution ſo as to render it unſuſceptible to the future effects of other fatal diſeaſes beſides ſmall pox, cannot yet be determined. It was at one time believed that vaccination would be found a preventive of the rot in ſheep; but ſubſequent experiments have proved that thoſe animals are not ſuſceptible of vaccine infection; though the matter of rot itſelf inoculated upon them is found to diminiſh the mortality

lity of the diſeaſe, in the manner that variolous inoculation leſſens the number of deaths from ſmall-pox.

Doctor De Carro, who is ever upon the alert in any thing that concerns vaccination, entertains hopes that it may be found a preſervative againſt the plague.

After what has been done by the vaccine diſeaſe, it would be raſh to ſay what may not be done. At the ſame time it occurs to recollection that the plague is a diſeaſe which may be received more than once, and that if it does not prevent its own return, it is not very likely that another diſeaſe ſhould poſſeſs ſuch a power. Future experiments, however, muſt determine the point; for certainly, to the generality of medical men, nothing could have appeared more improbable five years ago than that ſo ſimple and efficacious a remedy would ever be diſcovered againſt the ravages of ſmall pox, more fatal than the plague itſelf.

An ingenious medical gentleman of Calcutta ſuggeſted a few days ago the application of vaccine matter to a very bad cancerous ſore on the noſe and face, which had for ſome years reſiſted all the remedies that could be deviſed. The ſore had approached very near to both eyes, and the trial was therefore oppoſed from fear of doing irreparable injury to them, on the authority of the caſe quoted above from Doctor De Carro. As the patient was an adult and had had the ſmall pox, it was by no means certain that any vaccine action would have taken place; however, the riſk was thought too great, and the experiment was, conſequently, abandoned. In almoſt any other part, the propoſal might have been adopted with ſafety; and whenever ſuch a caſe occurs to me, I ſhall certainly give it a fair trial in cancer, as well as in other ſores difficult to heal. My hopes of its effects in cancer, I confeſs, are not ſanguine; but in ſo deplorable a malady what is there that one would not try?

(Signed)

J. SHOOLBRED.

P. S. Since

P. S. Since writing the former part of this Appendix, it is with much concern that I have obſerved failures in inoculating with recent fluid matter to have become much more frequent with the increaſed heat of the weather(12). On one of my inoculating days, I have been a ſecond time reduced to a ſingle puſtule as the only ſource of infection for that day's operations. Had this puſtule been deſtroyed, I ſhould not, however, have loſt the virus; becauſe having two inoculating days in the week, I had ſtill in the earlier ſtage of the diſeaſe a reſerve of ſeven or eight

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(12) The ſame obſervation has been made in the Weſt Indies, where the diſeaſe has been repeatedly loſt, in conſequence of the heat of the climate; a circumſtance which has led medical practitioners in thoſe iſlands, to conſider it as an eſtabliſhed, though "lamentable fact, that in a temperature of ninety degrees, the vaccine matter loſes its activity and becomes abſolutely effete." *(Medical and Phyſical Journal, for December 1803.)* This coincidence of obſervation in ſimilar climates, is a ſtrong confirmation of what I have ſaid of the impaired activity of the matter in very hot weather, and affords an additional proof of the efficiency of the vaccine eſtabliſhment in Bengal, which has fortunately been able to preſerve the diſeaſe by ſucceſſive inoculations, though the thermometer has during the laſt two months often exceeded one hundred degrees in the huts of the patients under vaccination. *June* 9, 1804.

patients to ſupply matter on my next inoculating day. I mention the circumſtance, however, to ſhew how very delicate a thing the vaccine virus is; and how much care and circumſpection will always be neceſſary on the part of thoſe concerned in its preſervation in this part of the world (13).

TRUE COPY,

F. BALFOUR.

FORT WILLIAM,

Medical Board Office, April 19, 1804.

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(13) Before ſending the laſt ſheet to the Preſs, it gives me great pleaſure to announce, that accounts have been received of the vaccine diſeaſe having reached Bencoolen, in conſequence of the meaſures adopted by Government, for that purpoſe, as detailed in the Report, page 24. *June* 10, 1804.

ERRATA.

Page.	*Line.*	
15		*dele* the inverted commas at the beginning and end of the Note.
28	4	*for* regard *read* regards
—	3	from the bottom, *for* know *read* knows
62	4	*dele* the comma after ſuſtained
69	4	*for* PLACTICE *read* PRACTICE
92	16	*for* inocolation *read* inoculation
105	11	*after* confined, *inſert* almoſt
107	15	*for* appearing, perhaps, once in ten, fifteen or twenty years—*read* appearing at the diſtant periods above mentioned.